AMAZING STORIES

JUNE
25 Cents

Scientific Fiction by:

David H. Keller, M. D.

William Lemkin, Ph. D.

Murray Leinster

J. Lewis Burtt

To add 50,000 NEW CUSTOMERS

America's Largest MAIL ORDER Credit Jewelers OFFER THE MOST SENSATIONAL VALUES

EVER ATTEMPTED IN GENUINE DIAMONDS & FINE JEWELRY

Our goal is 50,000 new customers—50,000 more jewelry buyers to whom we can demonstrate that our tremendous purchasing power and direct sales methods enable us to offer values which defy local cash or credit competition anywhere! That's why we have slashed prices so daringly on these fine quality and very popular items.

AND YOU NEED NOT PAY CASH!

The privilege of a Royal charge account is as open to you as though you lived around our corner. We offer you credit accommodation without the slightest embarrassment: no red tape; no delay no interest, no extra charges. Simply send $1.00 and your name and address. We ship prepaid. **No C. O. D. to pay upon arrival. ALL DEALINGS STRICTLY CONFIDENTIAL.**

10 Day's Free Trial—10 Months to Pay!

If you can duplicate our values anywhere, send back your purchase and we'll return your dollar. If convinced you cannot equal our values just pay the small amount stated each month. We know you'll be so pleased with your selection that you too, will be come a "Royal" friend.

Satisfaction Absolutely Guaranteed

Written Guarantee Bond accompanies every diamond and watch purchased. From start to finish your satisfaction is assured. You'll never see values like these again—nor more liberal terms. Place your order TODAY—**satisfaction absolutely guaranteed.**

Sent to you for only $1.00 DOWN

10 MONTHS TO PAY

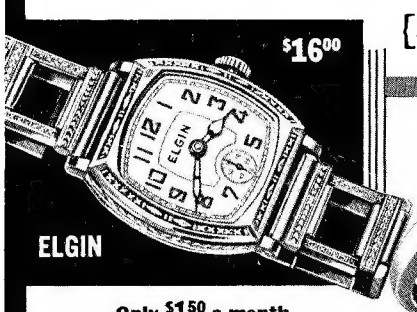
$19.75

2 Diamond Baguette

Only $1.87 a month

GA1 . . . Here is value which challenges all comparison! Latest style Baguette wrist watch. Slender, dainty, white lifetime case, set with **2 sparkling, Genuine Diamonds.** Guaranteed dependable, genuine Baguette movement. Newest type bracelet to match. Complete in handsome gift case. *Formerly* $29.75. *Get Acquainted Sale Price Only* $19.75—$1.87 *a month.*

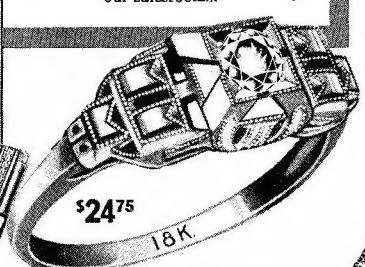
[Residents of Greater New York are invited to call in person at our salesrooms.]



$16.00

Only $1.50 a month

GA6 . . . Nationally famous, **Elgin** wrist watch, regularly $22.50. Now offered for only $16.00. Handsomely engraved, lifetime, new style chromium finish case. Absolutely dependable and fully guaranteed. *Get Acquainted Sale Price Only* $16.00—$1.50 *a month.*



$24.75

GENUINE DIAMOND RING

Only $2.37 a month

GA2 . . . Strikingly new, 18K Solid White Gold lady's ring of exquisite design; delicately hand pierced and set with a specially selected brilliant genuine blue-white diamond. Offered for the first time at this low price. *Get Acquainted Sale Price Only* $24.75—$2.37 *a month.*

$19.85

9-Diamond Wedding Ring

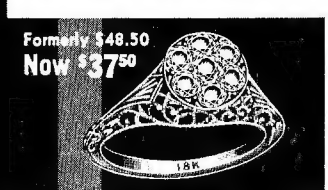
Only $1.88 a month

GA5 . . . Exquisite, newest style, wedding ring set with **9 fiery, genuine diamonds.** Beautifully hand engraved, 18K Solid White Gold. *Get Acquainted Sale Price Only* $19.85—$1.88 *a month.*

$17.85 for both

Only $1.68 a month

GA7 . . . Exquisite ensemble, genuine, sun-ray crystal set ring and pendant. Engraved and pierced 14K Solid White Gold. Each is set with a brilliant, genuine diamond. Marvelous value. *Get Acquainted Sale Price for Both* $17.85—$1.68 *a month.*



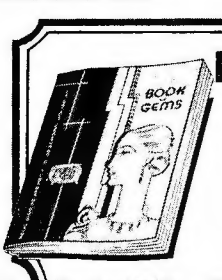
Formerly $48.50
Now $37.50

Only $3.65 a month

GA9 . . . Dazzling cluster of 7 expertly matched, genuine blue-white diamonds, set in a hand pierced 18K Solid White Gold lady's mounting; looks just like a $750 solitaire. *Get Acquainted Sale Price Only* $37.50—$3.65 *a month.*

GIFT CASES FREE!

Every article comes to you in a most beautiful and appropriate presentation case.



FREE! Send for latest catalog showing values $25 to $1000

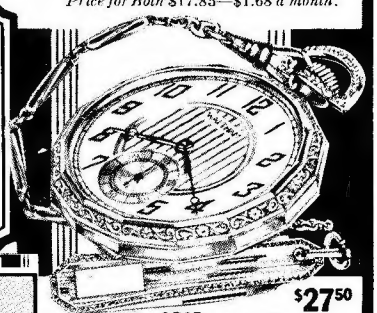
Completely illustrated new catalog describing hundreds of very special values in genuine, blue-white diamonds from $25 to $1000; also Bulova, Benrus, Elgin, Waltham, Hamilton, Howard, Illinois Watches, and other standard makes from $12.50 and upward; special bargains in smart modern jewelry and silverware.

SEND FOR YOUR COPY TODAY

$16.95

$1.59 a month

GA4 . . . Gentleman's massive, initial ring of Solid White Gold. Genuine black onyx set with a brilliant genuine diamond and your initials in raised White Gold. Specify 2 initials desired. *Get Acquainted Sale Price Only* $16.95—$1.59 *a month.*



$27.50

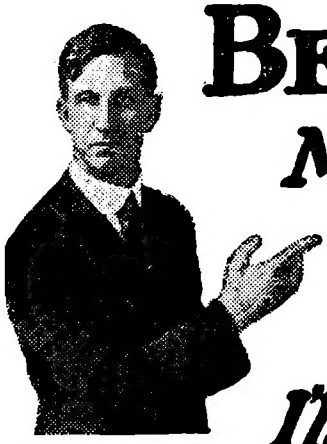
Only $2.65 a month

GA8 . . . Nationally-famous 17-jewel **Waltham**; tested and regulated. Engraved, 12 size, thin model, white lifetime decagon case. Fully guaranteed. Fine Waldemar chain and knife to match. All complete in handsome gift case. *Get Acquainted Sale Price Only* $27.50—$2.65 *a month.*

ESTABLISHED 1895

ROYAL DIAMOND & WATCH CO.

Address: DEPT 58-F | 170 BROADWAY, N.Y.C.



J. E. Smith, President, National Radio Institute, the man who has directed the Home-Study training of more men for the Radio Industry than any other man in America.

BE A RADIO EXPERT

Many Make $50 to $100 a Week

I'll Train You at Home in Your Spare Time for RADIO · TELEVISION · TALKING MOVIES

Set Servicing

Spare-time set servicing pays many N. R. I. men $200 to $1,000 a year. Full-time men make as much as $65, $75 and $100 a week.

Broadcasting Stations

Employ trained men continually for jobs paying up to $5,000 a year.

Ship Operating

Radio Operators on ships see the world free and get good pay plus expenses. Here's one enjoying shore leave.

Aircraft Radio

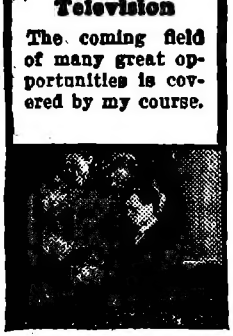
Aviation is needing more and more trained Radio men. Operators employed through Civil Service Commission earn $1,620 to $2,800 a year.

Talking Movies

An invention made possible by Radio, offers many fine jobs to well-trained Radio men, paying as much as $75 to $200 a week.

Television

The coming field of many great opportunities is covered by my course.



If you are dissatisfied with your present job, if you are struggling along in a rut with little or no prospects of anything better than a skinny pay envelope—clip the coupon NOW. Get my big FREE book on the opportunities in *Radio*. Read how quickly you can learn at home in your spare time to be a Radio Expert—what good jobs my graduates have been getting—real jobs with real futures.

Many Radio Experts Make $50 to $100 a Week

In about ten years the Radio Industry has grown from $2,000,000 to hundreds of millions of dollars. Over 300,000 jobs have been created by this growth, and thousands more will be created by its continued development. Many men and young men with the right training—the kind of training I give you in the N. R. I. course—have stepped into Radio at two and three times their former salaries!

Get Ready Now for Jobs Like These

Broadcasting stations use engineers, operators, station managers, and pay up to $5,000 a year. Manufacturers continually employ testers, inspectors, foremen, engineers, service men, buyers, for jobs paying up to $6,000 a year. Radio Operators on ships enjoy life, see the world, with board and lodging free, and get good pay besides. Dealers and jobbers employ service men, salesmen, buyers, managers, and pay up to $100 a week. My book tells you about these and many other kinds of interesting radio jobs.

Many N. R. I. Men Have Made $200 to $1,000 In Spare Time While Learning

The day you enroll with me I send you material which you should master quickly for doing 28 jobs, common in most every neighborhood, for spare time money. Throughout your course I send you information on servicing popular makes of sets; I give you the plans and ideas that have made $200 to $1,000 for N. R. I. students in their spare time while studying. My course is famous as the course that pays for itself.

Talking Movies, Television, Aircraft Radio Included

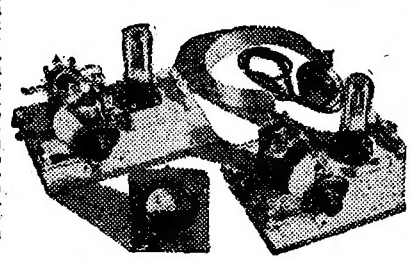
Special training in Talking Movies, Television and home Television experiments, Radio's use in Aviation, Servicing and Merchandising Sets, Broadcasting, Commercial and Ship Stations are included. I am so sure that N. R. I. can train you satisfactorily that I will agree in writing to refund every penny of your tuition if you are not satisfied with my Lessons and Instruction Service upon completion.

64-Page Book of Information FREE

Get your copy today. It tells you where Radio's good jobs are, what they pay, tells you about my course, what others who have taken it are doing and making. Find out what Radio offers you without the slightest obligation. ACT NOW!

.. NEW Radio Equipment for Broad Practical Experience Given Without Extra Charge

With the aid of this equipment you can work out with your own hands many of the things you read in our text books. From it you get the valuable experience that tells an expert from a beginner. In a short time you have learned what it would take years to learn in the field. It's training like this that puts the extra dollars in your pay envelope. Some of the many circuits you build and experiments you perform are: Measuring the merit of a tube, building an ohmmeter, tube voltmeter, and a Grid dip meter for service work. You actually make experiments illustrating the important principles in the 25 best known sets.



THIS COUPON IS GOOD for One FREE COPY OF MY BOOK — mail it NOW

J. E. SMITH, President
National Radio Institute, Dept. 2FS
Washington, D. C.

Dear Mr. Smith: Send me your free 64-page book, "Rich Rewards in Radio." I understand this does not obligate me and that no salesman will call.

Name.....

Address.....

City.....*State*.....

JULES VERNE'S TOMBSTONE AT AMIENS PORTRAYING HIS IMMORTALITY

AMAZING STORIES

Scientific Fiction

Vol. 7 June, 1932 No. 3

In Our Next Issue

THIA OF THE DRYLANDS, by Harl Vincent. Rocket experiments go on apace. Even if none of us now on this earth live to see the day of a successful rocket-flight to the moon, for instance, it is reasonable to expect rocket-travel to become more than child's play or an experimenter's hobby, even within our lifetime. Certainly, the idea does not strike us now as fantastic as it did even two or three years ago. For that reason, alone, if for no other, Harl Vincent's story of interplanetary commerce, intrigue and adventure, is so very absorbing.

THE RESISTANT RAY, by Francis Flagg. In a manner all his own, this well-liked author combines human interest and pathos in his tales of possible future life and science, so that his amazing stories become gems of scientific fiction. "The Resistant Ray," we are sure, will add many names to his already long list of admirers.

SHERIDAN BECOMES AMBASSADOR, by Warren B. Sanders. It all simmers down to an unanswerable argument: your international—or as happens in this case, your interplanetary—ambassador is directly responsible for relations, amicable or otherwise, that are finally established. And it isn't always the trained diplomat who does the best job. Sheridan never even heard there were inhabitants on Venus. But when he met them—quite by surprise—but you'll want to read the story. It's quite entertaining, excellently written, and very convincing.

THE METAL DOOM, by David H. Keller, M.D. (A Serial in three parts) Part III. Who really starts the brave survivors of this new Stone Age on the road of progress as the civilization of the 20th Century knows it? You'll never guess, until you've read the concluding chapters of this remarkable story, by our psychiatrist-author.

And Other Unusual Scientific Fiction

In Our June Issue

Masters of the Earth
By John Edwards..... 200
Illustrated by Morey

The Lemurian Documents
No. 4: Phaeton
By J. Lewis Burtt..... 222
Illustrated by Morey

What Do You Know?
(Science Questionnaire) 230

A Matter of Nerves
By William Lemkin, Ph.D...... 232
Illustrated by Morey

The Metal Doom
(A Serial in three parts) Part II
By David H. Keller, M.D...... 250
Illustrated by Morey

Red Moon (A Poem)
By V. R. Eberhart..... 267

Politics
By Murray Leinster..... 268
Illustrated by Morey

In the Realm of Books..... 280

Discussions 281

Our Cover

in this issue depicts a scene from the story entitled, "Masters of the Earth," by John Edwards, in which the enemy craft is seen directly over the flotilla of American yachts, sending down a series of well-timed explosions above the sea's surface. In a few minutes, the contingent of small vessels was enveloped in a dense, poisonous fog.

Cover Illustration by Morey

Published Monthly by **Teck Publishing Corporation,** *Washington and South Avenues, Dunellen, N. J.*

OFFICERS

Lee Ellmaker, *President*
Warren P. Jeffery, Huston D. Crippen, *Vice Presidents*
William Thompson, *Treasurer*
Wesley F. Pape, *Secretary*

EDITORIAL AND EXECUTIVE OFFICES
350 HUDSON STREET, NEW YORK CITY, N. Y.

Entered as second class matter at the Post Office at Dunellen, N. J., under the act of March 3, 1879.

Copyright, 1932, by Teck Publishing Corporation. All rights reserved. Title Registered at the U. S. Patent Office. Printed in the United States of America. The contents of this magazine must not be reproduced without permission. We cannot be responsible for lost manuscripts, although every care is taken for their safety.

25c a Copy, $2.50 a year, $3.00 in Canada, $3.50 in Foreign Countries. Subscribers are notified that change of address must reach us five weeks in advance of the next date of issue.

BETTER CHECK UP

on yourself

You hear a lot about pay-cuts these days—economic readjustments sometimes require drastic steps. The subject is broad—and *personal!*

If your pay has been cut or your income otherwise reduced, talking about it won't help the situation any. Of course you already know this—but has this thought occurred to you: *The only way to restore your old pay and then increase it is to make your services more valuable!*

Here's how you can make your services more valuable—and there is no substitute.

Training is an asset today without comparison in value. Training makes men more secure on their jobs, puts them in line for *better* jobs and *more* pay. Are you interested?

Men who a few years ago believed nothing could stop their progress have been forced to face an undeniable fact—they lack the training to go ahead. Many of them—wisely—are enrolling with International Correspondence Schools to acquire this training. Are you satisfied? Are you *sure* you are secure with the present training you have? The coupon will bring the information you need—free. *Mail it today!*

INTERNATIONAL CORRESPONDENCE SCHOOLS

"The Universal University" BOX 5786-B, SCRANTON, PENNA.

★ Without cost or obligation, please send me a copy of your booklet, **"Who Wins and Why,"** ★ and full particulars about the subject *before* which I have marked X:

TECHNICAL AND INDUSTRIAL COURSES

- ☐ Architect
- ☐ Architectural Draftsman
- ☐ Building Estimating
- ☐ Wood Millworking
- ☐ Contractor and Builder
- ☐ Structural Draftsman
- ☐ Structural Engineer
- ☐ Electric Wiring
- ☐ Electrical Engineer
- ☐ Electric Lighting
- ☐ Welding, Electric and Gas
- ☐ Reading Shop Blueprints
- ☐ Telegraph Engineer
- ☐ Telephone Work
- ☐ Mechanical Engineer
- ☐ Mechanical Draftsman
- ☐ Machinist
- ☐ Toolmaker
- ☐ Patternmaker
- ☐ Pipefitter ☐ Tinsmith
- ☐ Bridge Engineer
- ☐ Bridge and Building Foreman
- ☐ Gas Engines
- ☐ Diesel Engines
- ☐ Aviation Engines
- ☐ Automobile Mechanic
- ☐ Plumbing ☐ Steam Fitting
- ☐ Heating ☐ Ventilation
- ☐ Sheet Metal Worker
- ☐ Steam Engineer
- ☐ Steam Electric Engineer
- ☐ Civil Engineer
- ☐ Surveying and Mapping
- ☐ Refrigeration
- ☐ R. R. Locomotives
- ☐ R. R. Section Foreman
- ☐ R. R. Bridge and Building Foreman
- ☐ Air Brakes ☐ Train Operation
- ☐ Highway Engineering
- ☐ Chemistry ☐ Pharmacy
- ☐ Coal Mining Engineer
- ☐ Navigation ☐ Boilermaker
- ☐ Textile Overseer or Supt.
- ☐ Cotton Manufacturing
- ☐ Woolen Manufacturing
- ☐ Agriculture ☐ Fruit Growing
- ☐ Poultry Farming ☐ Radio
- ☐ Marine Engineer

BUSINESS TRAINING COURSES

- ☐ Business Management
- ☐ Office Management
- ☐ Industrial Management
- ☐ Personnel Management
- ☐ Traffic Management
- ☐ Accountancy
- ☐ Cost Accountant
- ☐ C. P. Accountant
- ☐ Bookkeeping
- ☐ Secretarial Work
- ☐ Spanish ☐ French
- ☐ Salesmanship ☐ Advertising
- ☐ Business Correspondence
- ☐ Lettering Show Cards ☐ Signs
- ☐ Stenography and Typing
- ☐ Complete Commercial
- ☐ Civil Service ☐ Mail Carrier
- ☐ Railway Mail Clerk
- ☐ Grade School Subjects
- ☐ High School Subjects
- ☐ College Preparatory
- ☐ Illustrating
- ☐ Cartooning
- ☐ Lumber Dealer

Name.....*Age*.....*Address*.....

City.....*State*.....*Occupation*.....

If you reside in Canada, send this coupon to the International Correspondence Schools Canadian, Limited, Montreal, Canada

New Automobile Invention Startles Car Owners and Makes Money for Agents

The above cross section shows how easy it is to put the FITZALL adjustable seat cover on and how easy they are to take off. Note the overlap in the center where the sections meet. This allows adjustment for any size car from a Ford to a Cadillac.

Here's a newly invented comfort and convenience for car owners. Through the genius of the inventor any car owner can enjoy having perfect fitting seat covers at a low price by fitting the car with FITZALL adjustable seat covers. FITZALL seat covers are adjustable and perfectly fit any car or auto seat. There's no fussing—no bother—10 minutes' time and your car is equipped with seat covers that fit as if they were made to order. Sounds good, doesn't it? It is good—it is perfect—it is just what car owners want. Now everyone can enjoy the luxurious pleasure of expensive, tailored covers. Save the upholstery of the new car and dress up the looks of the old car. Enjoy that extra comfort afforded by the two squares of cool matting that protect clothes from getting shiny or wrinkly and which also discourages perspiration on hot, long rides. Made of durable linens, double stitched and reenforced throughout to guarantee long wear. Guaranteed to fit any seat. Your choice of following colors of four striped patterns: Tan and green, tan and blue, brown and white or blue and green. The promise for big sales and big profits for agents are enormous with this new invention. Its popularity will sweep the country. Ride with this success and share these profits yourself. Get the facts and come along with us.

Retails for $4.95 - Costs You Only $3.00

All other types of ready made seat covers will now go off the market. The only ones that will remain will be the expensive made-to-order auto seat covers and the FITZALL. The reason is plain. FITZALL fits just like a made-to-order cover, because it is adjustable to any seat and for any car—the beauty of it is that FITZALL is inexpensive and costs anywhere from one-half to one-fifth the cost of the custom made cover. It is excellently made by high-class workmen so as to contain durability as well as practicability and think of it, this great automobile service costs only $4.95 complete to cover the front and back seats of any car and you make $1.95 on every one you sell. All you do is take orders and collect and pocket your $1.95 commission on every sale.

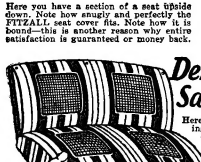
Here you have a section of a seat upside down. Note how snugly and perfectly the FITZALL seat cover fits. Note how it is bound—this is another reason why entire satisfaction is guaranteed or money back.

If $10.00 A Day Sounds Good To You, Rush Coupon

We are not over enthusiastic when we tell you that to easily sell up to five FITZALL seat covers a day is a cinch. Think this over for a second. Can you do it? Of course you can and there's the answer—$10.00 a day profit. Of course the more you sell the more you make. We have made everything easy for you to earn. Write for more particulars today, or better still, get started earning at once by sending for sample, order pads, selling hints, etc. Do not send any money now. Mark X in coupon. We ship by return mail. We allow you special agent's price of $3.00 (40% off the list. Pay postman $3.00 plus postage. (If you prefer to send cash with order, you may do so and save the postage.)

OFFER NO. 2—Send $2.00 and we will send miniature seat cover with FITZALL adjustable seat covers, order blanks, etc. It is easy to take orders when showing the miniature demonstrator. Your $2.00 is only a deposit. It is refunded to you after you send in 12 orders or more or any time you return the demonstrator.

OFFER NO. 3—A full set of FITZALL seat covers which is for the front and back seat of any car, the miniature demonstrator, order blanks, etc. $5.00. ($2.00 of this amount is refunded the same as in offer No. 2.) Get started! Act! Rush coupon today—NOW!



Demonstrating Sample FREE

Here's the miniature demonstrating sample which we believe every agent should carry. It shows in a jiffy just how FITZALL adjustable seat covers fit. It quickly shows how easy they are to put on or take off. It makes your sales easier and quicker and naturally your profits are greater. Given free according to our offer No. 2 and No. 3 explained in this advertisement. Pick your plan and rush coupon today.

SAWYER SPECIALTIES CO., INC.
Dept. 106 1775 Broadway, New York

NOTE:—When ordering, mention if sample is for TUDOR or SEDAN model.

SAWYER SPECIALTIES CO., Inc.
Dept. 106, 1775 Broadway, New York.

I want to share the profits with you on FITZALL adjustable seat covers. I accept the proposition checked below with the understanding that I can return whatever I select if dissatisfied and you will refund my money in full. I will pay postman agent's price, plus postage, on arrival.

- ☐ **No. 1**—1 set of FITZALL adjustable seat covers, order blanks, etc., special agent's price $3.00.
- ☐ **No. 2**—1 miniature demonstrator, order blanks, etc. ($2.00 to be refunded after you receive 12 paid-up orders)—deposit $2.00.
- ☐ **No. 3**—Full set of FITZALL seat covers, miniature demonstrator, order blanks, etc. ($2.00 of this amount to be refunded same as in offer No. 2)—$5.00.
- ☐ **No. 4**—I want additional information before taking up your proposition.

Name .....

Street .....

City ..... State .....

$75 a Week for Dobbins!
My graduate, R. N. Dobbins, got a job immediately after finishing my course. Now he's earning $75 a week as Chief Instructor at a big Aviation School in New York!
WALTER HINTON

Get on AVIATION'S PAYROLL!

Let Me Show You How to

EARN $60 to $100 a Week and UP in AVIATION!

Walter Hinton

First to fly the Atlantic; first to fly to South America; first to explore the upper regions of the Amazon by plane. Flying Instructor in Navy for five years. Now giving ambitious men practical ground work training in Aviation at home. If you are 18 or over, mail the coupon below for your copy of his big new FREE Book today.

My up-to-date home study Course gives you the ground work you need to *get and keep a real job* in this fascinating, fast growing industry. Scores of my graduates, who didn't know a thing about Aviation a few months ago, are holding down fine jobs right now—in the air and on the ground. *Over forty different types of jobs to choose from,* once you have this necessary training. Get the facts about my practical training, free Employment Service and Money-Back Agreement NOW!

I Teach You QUICKLY— at Home in Your Spare Time

You don't need to give up your present job—don't need to leave home, to get your training in Aviation. I've made it easy for you. I've put my own fifteen years of experience—backed by over 400,000 miles of flying—five years of instructing in the Navy—all into my thorough, quickly mastered home study Course.

No Previous Experience Needed

You don't even need a high school education—don't have to know anything about planes or engines to learn the ground work of Aviation with my Course. Everything is clearly explained—illustrated by hundreds of pictures, drawings and charts—made as simple and easy as possible. You get all the information you need to pass the Government's written examinations for Mechanic's or Pilot's Licenses, in a few short months. If you want to learn to fly, I can save you many times the cost of my Course on your flying time at good airports all over the country.

FREE Airplane Ride!

Right now I'm making an offer of a free airplane ride to all of my students. Write me at once and I'll send you complete information. Act now—to get in on this fine offer—while it is still open!

I'll Help You Get a Job

My nation-wide Employment Department is at your service—the minute you are qualified to accept a job in Aviation. We are constantly in touch with scores of airports, plane factories, etc., that want trained men for good jobs paying from $40 to $100 a week. No extra charge to graduates for this extra service. Free Book tells all about how I help my graduates get the kind of jobs they want! Mail the coupon now.

There's No Time To Lose— Get My FREE Book NOW!

Aviation is growing by leaps and bounds—while many other industries are slumping. Don't wait and let the other fellows get ahead of you. Think about your own future. Let me prepare you for a job paying $60 to $100 a week or more—in Aviation. Get the FACTS. Mail the handy coupon on the right today—right now—while you're thinking about it. I'll send you my big new FREE Book—packed with interesting facts about your opportunities in Aviation. Mail coupon NOW.

WALTER HINTON, President
Aviation Institute of U. S. A., Inc.
1115 Connecticut Ave., Washington, D. C.

Mail for my big FREE BOOK on AVIATION Now!

675-N

Walter Hinton, President,
Aviation Institute of U. S. A., Inc.
1115 Connecticut Avenue, Washington, D. C.

Please send me a Free copy of your book, "Wings of Opportunity," telling all about my opportunities in Aviation, how you will train me at home and help me get a job.

Name .....
(Print clearly)

Address ..... Age .....
(Must be 18 or over)

City ..... State .....

In Stark Terror She Watched Them Bid Madly for Her!

EXQUISITELY beautiful she stood on the auction block, shrinking back in terror as the swarthy Barbary pirates pressed forward eagerly to gaze upon her pink and white loveliness. Here, indeed, was a woman to grace the harem of the richest Mohammedan in Algiers!

There were three who grimly set themselves against each other to bid for this prize—Tsamanni, the agent of the rich and powerful Basha; Ayoub, the eunuch, there with sinister instructions from the Basha's favorite wife; and Sakr-el-Bahr, renegade Christian and idol of the multitude. Each had his own reasons for wanting her and was determined to outbid all.

What conflicting plots and counterplots lay behind this thrilling drama in an Algerian slave market? What chain of strange happenings thrust this favorite of Queen Elizabeth's court into the merciless hands of Barbary pirates? What was to be her fate?

If you would know the answer to this and a thousand equally thrilling adventures of the glorious days of past ages—if you would lose yourself, absorbed, enthralled under the magic spell of Sabatini—the modern Dumas—then send today Your Free Examination coupon for

The World Famous Historical Romances of ...RAFAEL SABATINI

New Uniform Library Edition—12 Big Volumes—4100 Pages

WHOEVER you are, wherever you are, you cannot afford to miss this rare opportunity to examine these immortal tales of historical adventure and romance, hailed by millions the world over!

Books to Read Over and Over

From the piratic days of the Spanish Main to the turbulent rule of James II—from the menacing times of the Spanish Armada to the profligate reign of Louis XIII—the magic pen of Sabatini holds you spellbound with narratives so realistic you seem to see history in the making. Glorious past ages live again before your very eyes—days of the greatest intrigue and romantic adventure in the history of the world!

Here, indeed, are books that combine rare entertainment with good history—stirring tales you will enjoy reading again and again with increasing delight. Enthralled, you will forget your troubles and increase your efficiency.

A Bargain for Quick Action

Printed from the very plates used for former high-priced editions, these splendid new sets are offered at a bargain that will be snapped up quickly by lovers of fine books the country over. So don't delay—but SEND THE FREE EXAMINATION COUPON TODAY.

Free on Approval

If you act promptly, we will send this wonderful set to examine free, all charges prepaid. If not delighted, return the set and you owe us nothing. But you must MAIL COUPON NOW!

FREE! IF YOU ACT NOW!

FAMOUS AFFINITIES OF HISTORY

In one volume complete. Read about the secret loves of famous men and women that have changed the course of history—the love of Antony for Cleopatra; Queen Elizabeth and the Earl of Leicester; Mary Queen of Scots; George Sand; Pauline Bonaparte and scores of other important personages. Formerly in four volumes at $10.00. A limited number now offered you free while they last, as a premium for promptness—but you must MAIL THE COUPON TODAY!

SEND TODAY SURE!

MAIL COUPON TODAY—YOU RISK NOTHING

Dept 560
6-32
McKINLAY, STONE & MACKENZIE
114 E. 16 St., N.Y.

Send me for free examination, charges prepaid, your new set of The World Famous Historical Romances of Rafael Sabatini, in 12 cloth volumes with titles in gold. If after 10 days, I am delighted, I will send you $1.00 promptly and $1.00 a month for only 14 months. Otherwise, I will return the set in 10 days at your expense. When you receive my first payment you are to send me your Famous Affinities of History without extra cost.

Name .....
Street .....
City ..... State .....
Occupation .....
Age: Over 21? ..... Under 21? .....

(5% off for cash) For rich Art Craft binding with gilt tops, change above to $1.50 a month for the same number of months.

McKinlay, Stone & Mackenzie, Dept. 560 114 E. 16th St., New York City, N. Y.

VOLUME 7

AMAZING STORIES

THE MAGAZINE OF SCIENTIFICTION

JUNE, 1932 No. 3

T. O'CONOR SLOANE, Ph.D., *Editor*

MIRIAM BOURNE, *Managing Editor*

Editorial and General Offices: 350 Hudson Street, New York, N. Y.

Extravagant Fiction Today - - - - - - - - - - Cold Fact Tomorrow

Our Flatland

By T. O'Conor Sloane, Ph.D.

NOT many miles north of Chicago, there is a strange little settlement, whose strangeness consists in its administration and in the laws which are enforced there for the guidance of its inhabitants. Many of us think that the best governed people are the least governed. This is the doctrine of the old Democratic Party in America. But things have changed, and now the great effort seems to be to give people government—good and plenty. We understand that cigarette smoking and the eating of oysters are prohibited in this community. The ruler of the city evidently has his own ideas, and one of them refers to the planet we are living in. He claims that its surface is plane, that it is perfectly flat. Recently he has traveled abroad and for some reason or other, these travels have confirmed him in his belief.

In an editorial some months ago, we spoke of the great smoothness of the earth's surface. In the Himalayas there are mountains which no one has been able to climb, but when we refer their height to the diameter of the earth, they appear as insignificant roughnesses upon its surface. A mountain five miles high would be regarded as something quite enormous by topographers and students of things terrestrial, but that height is miles short of the one-thousandth of the earth's diameter. Yet to reach this insignificant height the alpinist has to have his supply of oxygen to compensate for the rarefaction of the air, so we see what man is up against when he attempts to rise from the surface of the earth.

On a globe 10 inches in diameter, the Himalayas would be so trivial that they would not be noticeable.

We now may come to some of the smaller dimensions. Among athletes there are two jumps which are objects of the strongest competition; one of these is the high jump from the ground without any assistance. Recently the world has been amazed by the height of six feet 8⅛ inches having been obtained by a jumper, establishing an absolute world's record, if, of course, the technicalities were taken care of. The other is the pole vault. Here a man tops the bar at 11 feet or upwards. Such achievements as these make us wonder what man would do if he had the muscular power, relatively speaking, of the gorilla or other large simian.

In balloon ascensions what are termed great heights, are attained but the one-thousandth of the world's diameter pretty nearly definest the limit to which the most daring fliers can reach by balloon or plane.

We are familiar with one, two and three dimensions. The dimension of one gives us a point. The second dimension gives us a plane. The third dimension gives us a solid.

Often in considering these dimensions, a writer will picture the condition of a man in a two dimensional world, which they may term Flatland. They picture this man as if he were cut out of a sheet of paper, silhouette-fashion, and that a sheet of paper will stop his progress just as a wall would stop the progress of a being of three dimensions. All sorts of queer things are predicted about the two dimensional man, and now we come to the earth again.

Here we have a sphere approximately, really a spheroid, whose great irregularities are so slight that they would not show proportionately on a billiard ball. We have men in height far less than one millionth of its diameter, living on its surface. If they build a wall to enclose an area, in most cases it would be less than their own height. Taking the round number 8,000 as the number of miles diameter of the earth, it is interesting to calculate the heights of the tallest buildings in the world to see how trivial they are.

And coming back to our jumpers, one man may cover himself with glory by jumping an inch higher than his competitor.

There is no end to such figures as these—there is no end to drawing comparisons between the diameter of the earth and objects upon its surface. A thin sheet of paper on our ten-inch globe would represent proportionately a great height and most curious figures could be obtained by following all this out.

And now what is the object of all this. Does it not seem on first sight that we are living in Flatland? Does it not seem as if men were little figures cut out of paper, whose height would be the thickness of the sheet. We may say then that humanity is living in Flatland. As far as the earth is concerned, everything we deal with may be taken as two dimensional, because the thickness of anything is a trivial dimension.

It might be a comfort to those who believe that the world is flat, to picture to themselves how it would represent Flatland, except that they would miss the diameter of the sphere to give them the basis of measurement.

And the inhabitants of this Flatland of ours cannot walk a mile of what one calls a level road, without following a curved line due to the contour of the earth. If we give free rein to our imagination there will be no limit to the odd things we may bring out about our dimensional relations to this spheroid on which we live.

Masters of the Earth

By John Edwards

PROLOGUE

December, 1998 A. D.

FOUR persons were met together in the large and comfortable study of Professor Paul Lynthorpe, one of the world's leading scientists at this period—the closing stages of the Twentieth Century. With the Professor was his only son, Alan—a tall, black-haired young man of twenty-one years—and two guests. The latter were Sir James Oliver, the well-known chairman of that powerful firm known to the world as the British Electrical Combine; and Mr. Norman Matthews, an athletic looking clean-shaven man of nearly thirty years, late of the Imperial Air Force and now assistant in the Professor's amazing research laboratory.

The scientist, standing with his back to the large electric fire, as he methodically cut off the end of a dangerous-looking black cigar, wondered what would be the effect upon this chief guest, Sir James, of the remarkable announcement he was about to make. Lynthorpe was a tremendous figure of a man over six feet in height, with shoulders in proportion, jet-black short-cropped hair and bushy eyebrows, piercing dark-brown eyes, and clean-shaven out-thrust jaw, he looked scarcely forty years of age, although actually he was nearer fifty.

Having lit his cigar to his satisfaction under the impatient gaze of his small audience, he addressed them in his deep voice:

"Now, my friends, I expect that you are well aware that I haven't kept you all so late tonight without a special reason—" Sir James nodded expectantly— "Well, during the past four years that you have been at college, Alan, I have, with the invaluable aid of Mr. Matthews, been continuing a certain line of research which the late Doctor Cartwright left unfinished—"

"Cartwright!" exclaimed Sir James suddenly. "Pardon the interruption, Paul, but wasn't he the amateur scientist who electrocuted himself when on the eve—as he termed it—of a world-shaking discovery?"

"The same," nodded the Professor, "and the term 'world-shaking' is quite correct, as applied to the discovery I made some time ago when continuing that unfortunate investigator's experiments. Cartwright, I found, was merely dabbling with the old idea of broadcasting electrical power, and there was nothing very original in his ideas. His fooling about with enormous voltages led to his death and the destruction of his latest apparatus. I very soon realized that the creation of a strong electrical 'field' over a very large area was not to be obtained by indefinitely increasing the voltage at the transmitter. I have spent four years in a close study of terrestrial magnetism, and at last I have my reward!"

The scientist paused, his dark eyes traveling slowly over the expectant trio before him. Sir James Oliver leaned slightly forward, observing:

"Then you have succeeded where Cartwright failed?"

"Succeeded beyond my highest expectations, my friends, and along unusual lines. You will remember that, a year ago, I visited Canada in company with Mr. Matthews here. Well, at Ottawa we hired one of the largest and most up-to-date airplanes they possessed, and paid a short visit to the Boothia Peninsula in the far north of Canada—our friend here, of course, acting as pilot."

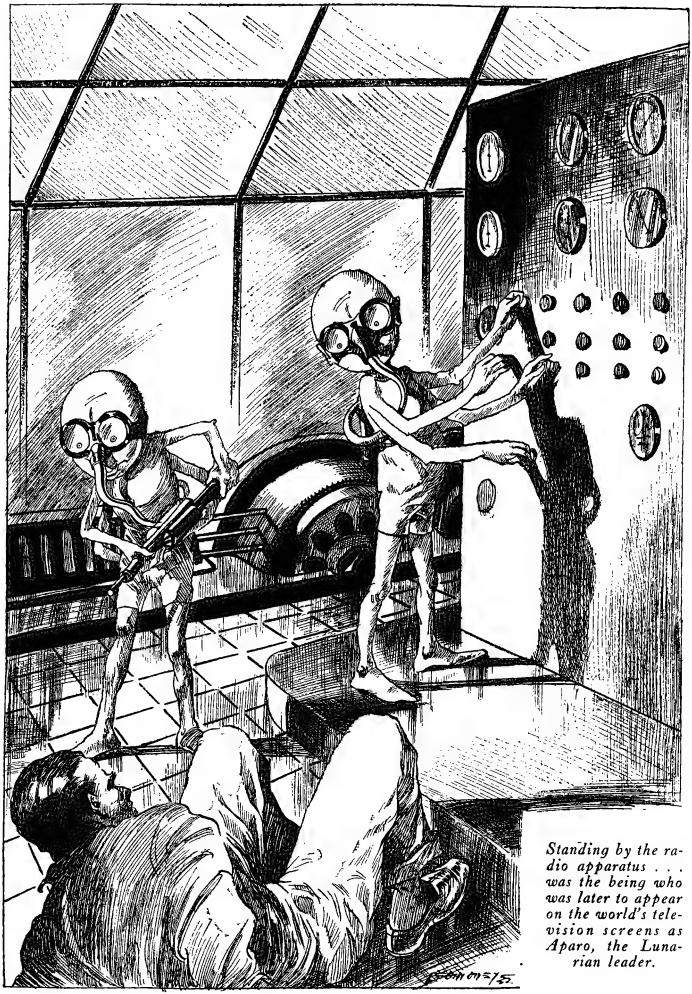
Sir James and Alan sat up suddenly at this news.

"What on earth were you doing up there, dad?" gasped Alan, in wonder.

Lynthorpe laughed at their aston-

Author's Note

THE subject of Terrestrial Magnetism is one on which the information available is very vague indeed, and upon which scientific theories differ considerably. Similarly, it should be borne in mind that nothing whatever is known about one-half of the moon, and that some scientists still hold that there may be some form of life upon our companion planet. Certain of the advances in Science mentioned in the story are already on the way, and the reader will realize that there is really nothing so very far-fetched or improbable in this fantasy of the future.



Standing by the radio apparatus . . . was the being who was later to appear on the world's television screens as Aparo, the Lunarian leader.

ishment. "To get as near as possible to the North Magnetic Pole," he replied. "There we conducted certain experiments upon a small scale with some gear which we had had shipped from Liverpool earlier that month. The results of those experiments were rather remarkable, when one considers the restricted nature of the apparatus I employed."

"But what has the Magnetic Pole to do with the distribution of electric power waves, pater?" asked Alan.

"Now Alan, I did not say that I was attempting to broadcast power waves—nor was I. What I did do was to create an intense magnetic 'field' for a radius of several hundred miles around the Peninsula. Later, when we returned to Ottawa, we found that numerous power-stations and all electrical gear in the northern Canadian towns had been seriously interfered with, many of the motors burning-out, and the spare plant in each case refusing to start-up at all. Naturally, the Canadians did not know the real cause of the trouble—and naturally enough under the circumstances, we did not trouble to enlighten them in any way! We were supposed to have been doing a little studying of semi-Arctic life and conditions, and had no wish for publicity."

SIR JAMES OLIVER nodded slowly as the Professor paused. "I quite see your intentions, Paul. With a fully-equipped centre in Boothia Felix, there is no knowing what the effect would be—although one can guess! I fail to see however, of what practical use such a power-centre would be; and why all the secrecy?"

"One moment, please," said Lynthorpe. He crossed to a large desk in a corner of the room, and opened a small wall-safe above it. Taking from the latter a short roll of tracings, he returned to the centre of the room and spread them out on the huge circular table there, remarking: "These are the plans of the proposed lay-out of the world power-centre which I hope one day soon to commence erecting. We have already selected a suitable site in the Boothia Peninsula, in approximately the area through which the North Magnetic Pole may be expected to vary its position during the next few dozen years. As you know, the Magnetic Poles vary slightly in position each year, but this will not affect my scheme to any extent, merely varying the intensity of the electro-magnetic field which I hope to control from Boothia. I cannot go into the technical means by which I arrived at the solution of my difficulties, as I doubt whether I could make myself clear to my scientific colleagues! Sufficient for the present that I have succeeded, as our little experiment in Boothia proved, in utilizing the natural and extremely powerful forces of the Earth's magnetism—as concentrated at the Magnetic Poles—to produce an intense electro-magnetic force which should, I estimate, be able to completely paralyze all electrical apparatus throughout the Northern Hemisphere, and would not be without considerable effect in the South also!"

There was a short silence as his three listeners digested this startling information, then Sir James spoke:

"I am well aware Paul, that the theories about terrestrial magnetism have undergone considerable alteration during the last fifty years, and that its investigators are still in a considerable fog about it—especially since the upset caused by Cartwright's paper on sun-spots. which wrecked all previous ideas upon the subject. As you say, you would have considerable difficulty in explaining your wild-sounding scheme in the light of recent hypotheses—but there is no ignoring the practical proof of your experiment in Canada, however difficult it may be to prove on paper. However, apart from all that, what exactly do you mean to do with this terrific force, assuming that the station be built in Boothia?"

"Simply to end war, or any threats of war, once and for all," said the Professor earnestly. "That is my reason for secrecy. If any country tries to force war upon another, a few hours' demonstration of the power I hope to wield from the proposed power-centre at Boothia Felix should make the war-mongers pause and think a little. Should they ignore such a warning, then they will find it quite impossible to wage war with modern weapons, while the magnetic field exists! All our modern electric transport, industrial machinery, communications, and lighting will be paralyzed completely!"

"The idea seems a splendid one, Paul," murmured the baronet, as he scanned the plans spread out before him. "And especially so in view of the threatening unrest in the East. But, tell me, from where do you intend to draw your power supply which is to be the artificial foundation for setting in motion, or rather, intensifying the terrestrial lines of magnetic force which I see you have indicated here?"

Lynthorpe waved his cigar reassuringly as he replied: "We have all that settled long ago. Once built, the upkeep of the station will be comparatively small. I have talked enough just now, and it is now Mr. Matthews' turn to tell you something about the site itself."

Matthews, who had remained silent during the Professor's explanations, now nodded and spoke in his quiet voice:

"Out in Boothia we found a large tract of fairly level ground, a kind of plateau not very far above sea-level. This is bounded on its west side by a big stretch of marshy ground—most unusual in such a region. We later found the reason for it, in a large geyser which was spouting away to the south, and surrounded by acres of boiling mud. The geyser water disperses in a swift-running stream with a six-hundred feet drop at a certain point. This great fall will supply us with a source of power *all the year round*, as the stream is warm enough to prevent its freezing. There is power there and to spare!"

"Well, it seems to me, theoretically speaking, that the station is practically built!" cried Sir James, who was becoming more and more enthusiastic about the possibilities of the daring scheme as point after point was dealt with. "I think I can guess why you let me in on this pet scheme of yours, Paul. You old rascal! You knew very well that if you got me interested you could count on me to help with the electrical gear. I know that you are not worried by any financial considerations, but if the Combine can help with a little loan—you are welcome!" Lynthorpe laughed in relief.

"Thank you, Jim—I thought that I could rely upon you. Now, if it isn't too late, I could go into some of the details with you, if you wish, and discuss these plans."

The Combine magnate did wish, and it was nearly three o'clock in the morning before sheer weariness at last compelled the four enthusiasts to desist, and retire to their respective rooms, there to dream of the power

for good which they hoped to be wielding within a year or so.

CHAPTER I

December, 1999 A. D.

DURING the closing weeks of the Twentieth Century an uncertain and insecure atmosphere prevailed in European international affairs. Sixty years before, the leading Powers of the world had combined in a solemn and elaborately-worded Treaty intended to outlaw war; each country concerned promising to maintain only a small defense force—mainly aerial—should it be called upon to defend its inhabitants from the attack of some smaller country not included in the Treaty.

Unfortunately for the peace of Europe at this period, the dreadful lessons of the last European War—over eighty years ago—had been forgotten by new generations during this long period of peace and comparative prosperity. International suspicion was rife; and two smaller Powers had actually contracted a secret Treaty, by which they were to combine in attack upon one of the larger countries when the time was ripe. These two small countries, with overflowing populations, had long cast jealous eyes upon the great fertile tracts of thinly-populated lands under the control of the larger Power.

Those countries which were signatories of the sixty-year-old Treaty were well aware that some trouble was brewing somewhere under the placid surface of European affairs, without being able to track the matter down with any certainty—so carefully guarded were the preparations of the war-makers. All this secret unrest after eighty years of beneficial peace! During that time Europe had reached a prosperity greater than ever before, thanks mainly to the steady advance of scientific research work and the inevitable world-wide cancellation of impossible war-debts between the various countries.

Electricity was now the useful servant of every nation, supplying the power for every means of locomotion, communication, heating, ventilating, aurivision* programs, etc. Air liners of all-metal construction, and fitted with special safety apparatus for use in the unlikely event of engine failure, still relied to a large extent upon the internal-combustion engine but using a new and economical fuel. This was non-inflammable, being two chemicals which only were explosive when combined in the cylinders, and was a tremendous improvement upon the odorous varieties of petrol which had been in use up to twenty years before. These aircraft, traveling as high as thirty miles above the Earth's surface, attained a speed in that rarefied atmosphere of fully eight hundred miles an hour.

Perhaps the greatest triumph of all was the huge radio station, established in Geneva fifty years before by the combined European Broadcasting Companies. This, the main radio centre of the old world, was in daily communication with smaller but similar stations in the other continents of the Eastern Hemisphere, and also with a similar super-station established in New York. The daily inter-communication between these super-stations (whose growth and reliability at all times had dispensed with the hundreds of small stations which had congested the ether years before) was carried on by telephony in the new International Language of the world. This was a type of English, phonetically spelt, which had been adopted many years before by all the European countries, and was now becoming popular throughout the world.

While the majority of scientists had devoted their researches to the cause of peaceful industry, a certain number in the pay of various Governments had perfected terrible methods of destruction, for use in time of war. Hence an outbreak of war at this period of the world's history was the last thing all thoughtful people desired, as such a calamity could only mean the complete annihilation of the majority of "civilized" mankind. Such an appalling prospect, however, did not deter the war-makers in their preparations for trouble, as war-makers the world over are well-known to be lacking in imaginative vision.

This, then, the tense position in Europe during the early days of December of the last year of the Twentieth Century. Suddenly, while the nations watched and waited in suspense, there came to the world the first warning of the terrific power which lay in the hands of a small band of clever scientists who, with the interests of mankind at heart, were now firmly established upon a low plateau in the far North of Canada. The "warning" first commenced in a thirty-minute test of the exact scope—and limitations—of the magnetic influence which the super-power-centre in Boothia Felix could exert. The results of this trial by no means failed the expectations of the few men behind the daring scheme, and are best indicated by an extract from the leading British newspaper of that time:

... "——while the Royal Observatory confesses itself at a complete loss to understand the origin of the so-called 'magnetic storm' which yesterday paralyzed the entire industrial life of the Northern Hemisphere, and rendered all communication impossible for the space of about half-an-hour. The windings of all armatures of any description anywhere seem to have been destroyed by this mysterious influence, and all power-centres are now working on their emergency reserve plants. Electric traffic is still to some extent disorganized, and messages from very old ships state that their Diesel and steam machinery worked very sluggishly during the 'dead' thirty minutes, due mainly, it is believed, to machinery parts and propeller shafts 'siezing' in their bearings. All machinery seems to have shown an undue tendency to heat-up while the peculiar conditions existed. Leading astronomers cannot explain the strange phenomenon in any way, as the sun is not unduly afflicted with sun-spots, which in the past have usually been assumed to be the cause of electric disturbances. This incident is without parallel in the annals of Science, and——"

and so on in this strain for several columns.

AT the country house of Sir James Oliver, in a quiet part of Kent, were assembled several of his fellow-directors and certain representatives of the British Government. These latter gentlemen were there at the urgent request of the British Electrical Combine, who did not feel that they would be justified in taking upon themselves the full responsibility of such a gigantic

* Note:—Aurivision—combined telephony and television.

scheme without at least the unofficial approval of the Cabinet. As the Minister present had observed, in view of the international upheaval then threatening Europe, they were justified in fully investigating any scheme for the prevention of war—even at the risk of temporarily disorganizing world industry.

Sir James's aurivision apparatus in one corner of the room had just given forth the Geneva station's report of the damage wrought by the 'magnetic storm,' and switching off the set, the baronet turned to his guests, remarking:

"You see, gentlemen, that Professor Lynthorpe's first experiment has caused a great stir throughout the world. I have asked you all as my guests here this week-end, because it is necessary that we should all be together when Lynthorpe gives me a private demonstration, which he has promised for tonight. As you have all taken such a kindly interest in such a wild-sounding enterprise, and lent great finanical support, it is only fair that you should be present at this private message from the Professor, before he announces his intentions to the world tomorrow."

"You have been in direct communication with him then?" asked the Cabinet Minister. The baronet nodded. "I was speaking to him this afternoon, using the special short-wave beam system which we agreed upon. This system ensures complete privacy, which, as you gentlemen will understand, is absolutely necessary in this undertaking. In a few minutes, at midnight, we shall hear from the Professor. Now gentlemen, if you will please group yourselves in front of this radio-camera, we shall be able to transmit a picture of this gathering to Lynthorpe."

His guests obeyed, while he switched on the set and made the necessary adjustments. A slight purring sound issued from the instrument, dying to a faint murmur as the controls were adjusted. Upon the three-feet-square television receiving screen appeared a blurred image, which at a touch of the control dial resolved itself into a clear living picture of Professor Lynthorpe (in miniature) standing before them. The scientist's features lightened with satisfaction and his lips began to move. From the loud-speaking cabinet there issued his powerful bass voice:

"Ah! Good-afternoon, gentlemen! Or perhaps I *should* say—Good-evening! I had almost overlooked the fact that you are six hours ahead of our time here. I can see you all perfectly upon my screen here—and I take it that you can see me all right?—" then, as Sir James reassured him, he continued: "Well, we are all snugly settled down, in spite of the terrible climate outside our station walls, and ready for the important 'ultimatum' at noon tomorrow. I have been doing a little radio 'eavesdropping' with a wonderful set I have here, and, from the agitated state of the ether today, I gather that my little test has been quite a success—from *my* point of the view, anyhow! I think you will agree that the erection of this station has been justified by the results. Now, if you will wait a minute or so, I will give you a full view of the control-room, in which I am now standing. Stand by, please!"

The voice stopped and the image faded quickly away. From the loud-speaker there issued various sounds of movement and mutter of voices; then the Professor's voice was again heard accompanied by the appearance of a different scene upon the screen. This time there appeared a spacious room, containing long benches and cupboards along the three walls, visible, and lighted by well-screened, powerful electric globes. In the centre of the room stood the huge array of control panels—the nerve-centre of the monster station, and of the whole gigantic scheme. At the far end of the room stood the scientist's son, Alan, and his chief assistant, Norman Matthews, who waved their hands cheerfully to the group of men watching them from thousands of miles away. Lynthorpe senior moved about the room pointing out the various instruments of technical interest, calling out to his microphone as he did so.

"You can see, gentlemen, that we are well-equipped," he said. "The south wall, on which the radio apparatus is built, being your viewpoint, is therefore invisible to you. You will notice that we have no windows in this room, as they are pretty well useless most of the year here, and we need a very good light for our operations. There *is* one small observation opening in each wall, so that we can keep our eyes open in all directions, should this be necessary at any time. I wish that I could show you all a view of the whole station, but, while we have the necessary airplanes and televisor gear, it is of course impossible at this time of the year in these latitudes. I will therefore tell you briefly what we have done.

"In addition to this control room, below which lie our sleeping quarters, there is a larger building containing the sleeping quarters and recreation rooms for our staff of forty electrical engineers—all carefully picked men, as you gentlemen will understand. Then there is a small power-house for our own use; the great main generator-house for the housing of the gear which sets in motion the great forces which I can control from here; and finally, the airplane-shed. This latter, containing six high-speed fighting 'planes, is the only one of the buildings which opens directly on the barren country around us—for landing-space for the machines, of course. The remainder of the station is completely enclosed by a ten-foot steel wall, intended to keep out wolves, curious Esquimaux, or anything else which strays this way—not that anything has up till now. This wall is also part of the screening system we have here for the protection of our apparatus from the magnetic field.

"Now gentlemen, we still have much to do. I shall break in upon the Geneva Station's programme at noon, G. M. T. tomorrow, when you may expect a brief stop-page of all other communications to give emphasis to the anti-war ultimatum I shall then issue. Until then, I must bid you all—Good-night!"

Sir James called out congratulations and good wishes into his "mike" ere he also switched off his instrument. Then he turned expectantly to his guests with the query: "Well my friends, any sceptics left among you?"

The Cabinet Minister shook his head as he laid his hand on the baronet's shoulder, crying: "Sir James, I wish to congratulate the Professor and your Combine upon your great achievement! You and Lynthorpe will be the most powerful men upon this earth—and the power could not be in safer hands, I am convinced. War with modern weapons will be impossible under the handicap imposed from Boothia. The British Government cannot yet take an active part in such a bold scheme—until we have seen exactly what the international effect of this will be."

Sir James smiled: Mr. M—, cautious as ever, I see. You can rely on us not to abuse the power at any time."

"And who is to pay for all this?" queried the Minister.

"That also has been considered—we are not philanthropists enough to pay for this ourselves! The Boothia station will be maintained by indemnities levied upon all would-be war-makers—exceedingly heavy indemnities—as they are the cause of this station's appearance, and must pay for their folly."

The pros and cons of this suggestion were then gone into, along with other minor points of the scheme, and finally all retired to their comfortable rooms, each in highly satisfied mood, and looking forward to the next day's happenings.

CHAPTER II

A Shattering Ultimatum

IT was just past 11:00 a. m. on the following day that the shock came—a full hour before the specified time. It was a rather damp, miserable day, two weeks before the Christmas Festival, and Sir James Oliver and his guests were endeavoring to mask their various feelings of excited anticipation by dividing their time between the billiard room and library. In the latter room the radio was giving forth the day's first news bulletin, as broadcast by the Geneva Radio Centre.

At precisely twenty minutes past eleven the announcer's voice suddenly ceased in the middle of a sentence, while his image and that of the studio vanished from the television screen. The guests looked at their host in surprise. Breakdowns were an unknown occurrence in these days of perfected and duplicated apparatus. Sir James tried his controls in vain, then switched on his transmitter. A glance at his meters showed them to be standing at zero. At that moment, Evans, one of the company present, pointed out that the electric fire had ceased to glow, and that the horizontal pendulum of the electric clock, above the radio set, had ceased to rotate. A hasty glance at their watches and a futile attempt to switch on the lights convinced them that the Professor's magnetic power was once more in operation. The baronet looked worried as he moved across the room and looked out of the window.

"There is something wrong," he said. "There's a train stranded, and all traffic on the main road has come to a standstill! Look at the effect it has!"

His companions joined him at the large, full-height window, and gazed out upon the desolate result of the invisible power now at work. A long electric train lay stranded between stations on the distant railway line, while the driver and guard were examining the connections to the power-rail. A mile or so to the left lay the wreckage of a mono-car, which had fallen from the overhead mono-rail when its gyro-stabilizer had ceased to function. The main road was sprinkled with helpless electric and motor-driven vehicles. Two air-liners could be seen high in the air, descending slowly by means of gigantic "parachute" attachments, which showed that their motors were also useless.

"This is a serious mess!" ejaculated the Chairman of the B. E. C. "This surely can't be Lynthorpe's doing. What on earth can have happened? It is impossible to get into touch with him now. It is getting cold here too, confound it! I'll get the servants to put the emergency storage batteries into action. Please ring that bell, Mr. Evans. Thank goodness *that* will still work!" he concluded irritably.

A portable electric stove was brought in, and was soon warming the room once again, although that could not be expected to last more than two days, if the reserve supply was also to be called upon for lighting and cooking purposes.

"It isn't like Lynthorpe to do a thing like this without due warning to the world—or at least to us," fumed Sir James. "Good heavens! I wonder if he's lost control of the whole business?"

"Possibly—or else some Power has had secret information about the scheme, and has 'appropriated' the station!" suggested the Cabinet Minister.

"God forbid!" ejaculated the baronet, while his companions looked at each other in consternation, scarcely realizing as yet just what terrible possibilities that suggestion conveyed.

While the directors of the concern debated upon what move to make in the matter, the whole of civilization in the Northern Hemisphere was at a mechanical standstill. Even non-electric vehicles and machinery were adversely affected, as all metal was influenced in some mysterious manner by the intense molecular disturbance set up through the operation of the powerful forces of magnetism "run wild," as someone afterwards described the influence. Most institutions and large private dwellings, like that of Sir James Oliver, were fortunate enough to possess reserve supplies of battery current for emergency lighting and heating, but these could not be depended upon for many days, and the general "hold-up" was a desperately serious matter in this age of universal dependence upon electric current.

Apart from the few people interested in the Boothia station, no one knew where to turn for an explanation of the mystery. Communication was the chief difficulty, as no city was able to tell how its neighbors might be faring, although the non-arrival of trains and aircraft indicated that the trouble was widespread. A frantic search ensued during the next few hours for some means of message-carrying, and hunters and racehorses were requisitioned for the purpose, but these were few enough, in all conscience, to supply the sudden demand. Morse and Semaphore signalling had long since fallen into disuse, and nobody could be found to use these codes of communication. How helpless the northern world was without its electric nerves and power-centres!

THE directors of the B. E. C. arose the following day, after a restless night for each of them, to find that the unseen power was still in operation. A hurried conference held immediately after a miserable and gloomy breakfast, ended in a decision to acquaint Parliament with the full facts, should nothing be heard from Boothia during this second day. Some of the gathering even went so far as to cast doubts on Professor Lynthorpe's integrity, and hinted that the scientist now safely established in far-off Boothia, probably intended soon to announce himself as a kind of world-dictator, after first giving the nations a sample of the power he held.

They were right enough about the announcement—but it proved to be of a nature such as they had never imagined in their wildest conjectures. The magnetic field ceased to exist about noon on the second day, the world first awakening to the fact when the Geneva station broadcast its well-known call-sign, which automati-

cally started up all receivers which had been left tuned to its wavelength. Such aurivision sets suddenly produced the familiar image of the Geneva studio and announcer upon their television screens while such news of the disaster as had come to hand was read out. So far as the radio stations were concerned, however, the respite was short-lived. Within a few minutes the Geneva programme was "jammed" by an all-powerful signal which, after a few seconds' confusion of sound and televisor distortion, completely superseded Geneva. A continuous oscillatory note proceeded from the speaking cabinet, and upon the screen appeared the clear image of what Sir James and his worried guests recognized as part of the control room of the Boothia power-centre.

Gasps of incredulous amazement broke from the watchers, however, at sight of the creature which stood in the foreground of the screen. A Something . . . in the semblance of man, in that it possessed a similar, though smaller body, of incredible leanness, surmounted by an enormous head apparently entirely devoid of hair. The Thing stood there with one pair of skinny arms folded, while *a second pair of arms* rested on the bench before it! The builders of the Boothia station were to learn the use of these insect-like arms before very long. The most absurd—and fearful thing—about the creature was its ugly head. Possessing no visible ears or nose, a close inspection revealed that these organs were supplanted by tiny openings in the skull, the "ears" being covered by a light, transparent membrane.

The most human features about this monstrosity (in human eyes) were a comparatively small mouth—shut in a tight thin line—and a pair of absolutely jet-black eyes, which, being set under hairless eyebrows, had an appearance of protruding from their sockets; and in addition glared out at the world with an unblinking and almost hypnotic stare. The Creature's body and limbs were enclosed in a skin-fitting, drab-colored skin or cloth—it was difficult to distinguish the exact kind of covering—which extended up the back of the head and gave the Thing a goblin-like appearance. By comparison with the bench before which it stood like a monstrous insect, it could not have been more than five feet in height.

Apart from the terrible eyes, the "face" was as expressionless as a block of white stone, and remained so even when the small slit of a mouth opened, and from the listening world's loud-speakers there issued a low-pitched, monotonous voice, as expressionless as the face, but carrying in its tones that which compelled the attention of all who heard it.

The most staggering thing of all, however, was the announcement delivered by the strange being—*in the new International Language of converted English,* and made with a slow and hesitant enunciation:

"From the Lunarians to the peoples of the planet Terra—or Earth! Know by this proclamation that we, from the planet Luna—your companion world—are being driven from our nativity by starvation and necessity, and it is our desire to dwell on this fruitful Earth of yours. Its conditions are unsuited to us in many ways—but it is no part of our plans to toil for our existence here; the weapon which has been placed in my hands at so opportune a time will render that unnecessary!

"By telepathic means, of which you Earth-dwellers have as yet small knowledge, I long ago discovered that one amongst you had so far advanced in—as you say—physical science, as to build this amazing power centre, from which he intended to dictate to you when you should or should not wage war. A most laudable object —" (the Lunarian added with a suggestion of sarcasm) "—with which I thoroughly agree! I, certainly, will see that your worthy scientist's ideas are well carried out, as the inventor himself is not in a position to do so!"

The speaker paused a little to let the full meaning of his words sink in, and Sir James Oliver looked at his guests in dismay, suppressing an exclamation as the voice continued:

"More than that, however. The peoples of the Earth must understand now that I am their master—dictator, what you will—at all times! Fortunately for you all, chance has placed in my hands this invisible weapon; otherwise I should have been compelled to subdue you by force. You have just experienced a day's demonstration of the power I can wield . . . think what a few weeks or months under such conditions would mean—starvation!

"The remainder of my people from Luna will follow me here within a short time, and you who now listen to me will feed them! The Lunarians are not physically adapted for a strenuous life on this planet, so the Earth's people shall have the great privilege of working to supply our needs! Europe, being the birthplace of the builder of the wonderful station I now control, shall be the first to have the honor of paying homage to your new Earth Rulers! I will announce later the exact time and place, and the manner in which you are to supply us with the necessities for existence upon this planet. Meanwhile, any attempt to discover the situation of this station, or any other move of a rebellious nature, will be punished by the death of millions of you! If you refuse our demands, we may perish—should we stay here—but your civilization will assuredly perish also. You have little choice in this matter!

"Finally: in Europe are a number of men who know the position of this situation. To them I say: reveal your knowledge to anyone at your peril! Any attempt at organized opposition will be heavily punished. I possess machines which this magnetic power does not affect. Be warned, therefore . . . for the present, farewell."

THE monotonous voice ended upon a mocking note, the "rushing" noise which formed a background to the transmission died away, together with the disappearance from the screen of the grotesque image which had delivered the amazing speech, leaving a profound silence in Sir James Oliver's study. The baronet and his guests gazed blankly at each other, and at the empty television screen in stupefied dismay.

"What in God's name was that—that creature?" The voice of the Vice-chairman broke the silence harshly, startling his companions out of the semi-trance into which they had all apparently fallen after the strange announcement. Sir James shook himself and looked at the startled faces surrounding him.

"You heard what he—or it—said, Mr. Evans," he said quietly. "Aparo, the Lunarian—from the moon. But for the televisor I'd have taken that announcement as a bad attempt at a joke . . . but there was no joke about that apparition!"

"It seems incredible . . . absurd and incredible," muttered the Cabinet Minister. "For years our scientists have assured us that there was no intelligent life upon Luna—and then this happens. A Something comes out of space, somehow gets control of our dream station, and sets itself up as a kind of World Dictator."

"I'm worried about Lynthorpe and his staff," said the baronet anxiously. "What has this Creature done with them? I remember Lynthorpe was always a little inclined to the theory that some form of intelligent life existed in some subterranean manner on the moon . . . possibly on the side which we never see. However, the fact remains that these beings are here, and in force, else how could they take the Boothia Station? I feel sure that Lynthorpe will be too useful to these Lunarians for them to harm him in any way, apart from keeping him prisoner. The main question is: what part do we play in this situation now? This Aparo creature appears to know all about us, and you heard his threats."

"We had better discuss that right away," observed the Minister, "but what are the radio stations doing about it?"

"By Jove, I had forgotten that they will be working again!" exclaimed Sir James, as he stepped over to the aurivision apparatus and switched on the current. The set was "alive" all right, and stations and power-centres were again working on their emergency plants, collecting information from the whole world in an attempt to assess the extent of the damage done by the recent spell of inactivity under the magnetic ban. Tuning-in to Geneva, the latter could be heard frantically transmitting, on increased power, their emergency "stand-by" call. This continued for nearly half an hour; then, satisfied that the Earth's main radio-centres were ready to relay the transmission, the Geneva announcer could be seen entering the studio with papers in his hands. While the whole radio world waited, he read out:

"There is no need to emphasize the gravity of the situation with which we are faced. The whole world is faced with a desperate problem, requiring desperate measures to meet it. I am asked to broadcast the following message:—All League representatives who are not already in Geneva are asked to find means to get here as quickly as possible. The Council meets at twenty o'clock, G. M. T., with the object of issuing emergency orders. A full meeting is hoped for within twenty-four hours. Meanwhile, of course, each country must immediately take what steps it considers necessary for its food supplies, emergency mobilization of defence forces, etc., in the event that this power is again applied. Needless to say, anyone in Europe who can cast any light upon the position of this mysterious station is requested to place his knowledge at the disposal of—"

Abruptly the voice and image died away before the onrush of terrific power which usually heralded the intrusion of the Boothia radio energy, and upon the world's screens there reappeared the unpleasant image of Aparo, the Lunarian.

"So! Clumsy fools! You would ignore my warnings! I should compliment you upon your promptitude in dealing with the 'situation'! Will you *not* understand how helpless you are in this matter? Henceforth you will lie idle until you accept my terms. I will curtail this power at intervals of seven days to inquire of Geneva station whether you have come to your senses. The sooner you decide to accept the situation, the better for the civilization of this planet, and the puny intelligence thereof! Starvation is not pleasant—it usually leads to cannibalism! Now I leave you to reflect for seven days." Voice and picture both faded away, and a slight click from the set indicated the stoppage of the electric current. The clock again stopped, and the electric heater died out. There was an oppressive silence both inside and outside the room. The directors of the British Electrical Combine gazed helplessly at their host, who shrugged his shoulders in despair, as he looked at the clock. It had stopped at thirteen o'clock. The fourteenth of December, nineteen hundred and ninety-nine . . . eleven days to Christmas! The first shattering blow in the Lunarians' one-sided war with the Earth had been struck! What next?

CHAPTER III

Aparo Explains to Lynthorpe

ON the day following the thirty-minute test which first aroused the world to the existence of the unseen power, Professor Lynthorpe, Alan, and Norman Matthews were together in the control room of the Boothia Power Centre. An hour before, the Professor had been in radio communication with Sir James Oliver, and the local time was now 19.30—about 1.30 a. m. G. M. T.

Outside the station walls, the desolate, snow-bound country around them was dimly visible, through the observation ports, by the weak light of the moon in its last quarter as it hung low above the south-eastern horizon. Occasional displays of electric fire from the far northern sky lit up the dreary landscape periodically. Within a hundred feet of the station's high walls roared the six-hundred foot fall from the high land beyond, the tepid water emitting huge clouds of steam in the icy atmosphere through which it passed. Upon the river bank, in the very shadow of the fall, stood the building housing the huge water-turbines, the initial step in the tremendous power system which was the nucleus of the Professor's magnetic scheme.

Immediately outside the station walls stood an elaborate system of wire "screening," fully fifty feet above the ground, and which completely encircled the station upon all but the western side, where lay the entrance-doors to the airplane shed. This screen, which extended a considerable way underground also, shielded the station's plant from the influence of the magnetic "blight."

Lynthorpe senior and Matthews were occupied with some final adjustments of the control board, while Alan was standing idly gazing out of the western window-port at the effect of the Northern Lights upon the white snow-mantle. Suddenly, Alan's wandering attention was held by the appearance in the north-western sky of three dim, circular shadows, which were bearing down from an enormous height upon the station, and at terrific speed.

"Dad, come here quickly! There's something strange on the way here!" Alan's excited cry brought his companions to his side in a moment, and they followed his pointing finger. The three objects had by this time resolved into spheres, something like oblate spheroids, about a hundred feet in diameter and perhaps seventy feet in height. They did not appear to rotate as they approached the station at reduced speed, and of means

of propulsion or lights of any kind there was no sign whatever.

The scientist muttered something, and dashed to his radio-transmitter, sending out the International call-sign on a variety of wavelengths. There was not the slightest response. Leaving the set automatically transmitting the sign, he returned to the port, thrusting out his head to get a better view of the strange aircraft, which had by this time stopped altogether, and were hovering overhead. There was no sign of machinery to be heard, and still no signal from the radio receiver!

Suddenly, above the roar of the nearby falls, the shrill whine of descending missiles could be heard, and with a series of dull concussions they struck the station walls and buildings, emitting puffs of thin white smoke which gradually merged into one large white mist. This enveloped the whole station, pouring into all the ventilators and stealing ghost-like through all the rooms. The instant the first concussions were heard, the Professor sprang back into the room, pulling the other two with him, and slammed the hinged port shut.

"Gas!" he snapped, "and not a mask in the whole place! Whoever and whatever they are, they're no friends of ours. Alan, ring up the power-house and the men's quarters, and warn them! I'll soon put a stop to this!"

As Alan jumped to the 'phone which linked up the various buildings of the settlement, and Matthews switched off the radio set, Lynthorpe manipulated the main switchboard, bringing into force the magnetic field, which would bring down any motor-driven craft. A hasty glance out of the small window revealed the vague shapes still overhead, while outside the rain of gas missiles continued unchecked. Matthews looked at his employer, his fear showing in his startled eyes.

"The power isn't affecting them at all!" he muttered. "They're still at it, confound them!"

Lynthorpe looked out again, then swore softly. At that moment Alan banged down the telephone receiver and called across the room: "Dad! There's no answer from any of the buildings. I'm afraid we were too late —the gas has got them!"

"Confound them!" roared the incensed scientist, "Who, and what in the name of Heaven can they be? No light—no engines apparently, or they wouldn't still be floating up above there!" He stepped over to the control panel and flung out the heavy switches. "No use leaving the power in operation now, when it doesn't affect these things above. Here, you two! Run down to the magazine and bring up those automatic rifles—quickly!"

"Too late, I'm afraid," cried Matthews, pointing to the door of the room. Thin wreaths of the white gas were curling into the room round the edges of the closed door. "Don't open that door Alan!"

The Professor glared at the increasing trail of gas as it floated across the room, and the three of them backed towards the corner furthest from the menacing cloud. A glance out of the nearest observation-port showed that one of the strange aircraft was already landed *inside* the station walls.

"Norman," said the Professor quietly, once again master of himself, "all our many years' work now appears to be wasted. We can at least give our position to the world before the end. If you can reach the set, send out the S. O. S. as quickly as possible, and the bearing of this station, if you can get anyone in time."

A faint odor was now perceptible, the strange mist eddying slowly about the room was spreading out to all parts, and with his handkerchief over his nostrils Matthews managed to reach the radio set. At that moment, however, soft footfalls were heard in the passage outside, and the door was swung suddenly wide open, admitting a rush of dense fumes, amongst which moved a number of vague shapes. Matthews dropped in a heap as the gas swept by him; Lynthorpe and his son had a confused vision of dim masked figures in the doorway, as they leaned against the bench with reeling senses. The scientist made a feeble attempt to hurl a heavy lead weight at the invaders as his son collapsed at his feet—then, cursing weakly, he too sank to the floor, as the room reeled round him and everything went suddenly blank. . . .

SOME nine hours later, the Boothia control-room presented an unusual appearance. The air was once more clear, and the unconscious figures of the scientist and his two helpers still lay, where they had fallen under the influence of the white anaesthetic gas. Standing by the radio apparatus in one corner was the being who was later to appear on the world's television screens as Aparo, the Lunarian leader. This creature was evidently deeply interested in the working of the instrument, his four hands playing delicately over the controls of the receiver, from which issued scraps of music and voices from the various stations.

Standing at one of the small window-ports was an even smaller replica of Aparo's quaint figure, who turned occasionally to glance at the three unconscious forms on the floor. By the closed door stood two more Lunarians, holding in their hands small cylindrical instruments which had short nozzles attached. All four wore a type of anti-gas headgear.

Alan Lynthorpe was the first of the trio to realize that he was still on this earth. He slowly raised himself upon one elbow and gazed around, noticing first that the electric lights still burned brightly. The clock on the north wall gave the local time as 4.30 a. m., while the chronometer alongside indicated a Greenwich Mean Time of 10.40. His eyes opened wide as they rested upon Aparo and his henchmen, and a subdued exclamation nearby caused him to turn his head, to find that Norman Matthews was sitting up, gazing incredulously at the Lunarian leader.

"Well, I'm damned!" ejaculated the older man. Alan sat up and chuckled—he was feeling very light-headed. "I don't believe it either!" he observed, "but we're still in the control-room, at any rate. What the deuce—"

He was interrupted by a series of loud yawns and grunts from his father, as the latter also rapidly recovered consciousness.

Before they could say anything further, the chief Lunarian turned around and crossed towards them, followed by his fellow-monstrosity—apparently his chief assistant. Both "men" advanced with a peculiar loping walk—rather like the slow-motion film of a person walking—and evidently finding it rather an effort to do so. Aparo paused in front of his prisoners, and fixing his piercing black eyes upon each of them in turn, regarded them in complete silence for a time. The Professor, now fully in possession of his senses, coolly returned the Lunarian's stare, but the two younger men soon began

to feel the steady gaze was robbing them of the power of clear-thinking.

The three Englishmen started as the Lunarian opened his slit of a mouth and addressed them in their own language: "So! You are once again alive—you will find that the effect of the vapor wears off very quickly. That is well—I do not wish to lose you, yet! You may be of very much assistance to me in the near future."

Lynthorpe picked himself very deliberately from the floor, and glared down at the smaller being, who barely reached his shoulder in height, as though Aparo was some kind of insect—as indeed these creatures seemed to be, with their six limbs.

"And who the devil may *you* be—and why?" demanded the scientist; then turned at a touch on his arm from Matthews, who had also risen to his feet. The latter jerked his head behind to indicate the fact that the two guards had closed in upon them, and were standing with their cylindrical instruments levelled at the three prisoners.

"No abuse—Paul Lynthorpe!" returned the Lunarian, his face impassive, while the Professor started at the mention of his name. "You see that you are well guarded. You are surprised that I should know your name? Well, there are, no doubt, a number of things I could tell you which would astonish you—but that will come later. At present I would advise you to offer no trouble, as my followers behind you carry instruments which can produce that anaesthetic vapor, whose effects you have already experienced. You should realize that this wonderful settlement of yours is all completely in the hands of myself and my followers—" here the speaker paused, while the Professor choked and growled to himself with subdued rage—"and that will prevent any little 'misunderstanding' arising later! I will tell you so much as I think necessary to clear the way for a satisfactory understanding between us.

"My name, in your language, is Aparo—Aparo the Farseeing on my own planet—and with a number of my followers I have taken the opportunity to avail myself of the chance of Earth-mastery which you unconsciously placed within my reach. We come from your companion sphere, the Moon—ah, that surprises you! Yes, I know all about your theories of Luna, because I spent many weary years in learning, by what you term telepathic powers, (for want of better knowledge) your International Language. With others greater than I, I studied your speech until it became the speech of the leaders of our planet—in order that we might the more easily familiarize ourselves with the doings of the leading peoples of this Earth of yours. Thus we knew all about your great scheme from the beginning. I have been sent by the Great One of Luna—our only ruler—to take possession of this station. During the past few hours I have made myself familiar with your wonderful long-distance speaking instrument—your radio. We have nothing like that, but our methods of distant communications are perhaps more reliable.

"Now listen. Your men are all under guard. You three, the "mind" of the station, are also helpless. I desire some information from you regarding the working of this instrument here—" indicating the switchboard—" in order that I may proceed to carry out my further instructions—with which you have little concern."

THIS interesting little address, to which the two younger men had listened in a kind of stupor, and the scientist with increasing interest, had almost evaporated Lynthorpe's anger against his captors. The closing sentence, however, rekindled his natural resentment against the usurpers. He took a step forward, growling out: "I'll see you hanged first! D'you think we're going to sit by and let you run things *your* way—you puny, insignificant travesty of a—" Fortunately, he was interrupted by Matthews, who pulled him back with a whispered: "No use trying brute force against this object, Professor. He has the whip hand at present, and knows it. Let's see just what he means to do next, though I don't like the look in his ugly eye. Humor him!"

Although Aparo's face remained impassive before the Professor's outburst, his manner towards his prisoners had undergone a slight change, and once more his strange, hypnotic eyes were concentrated upon Lynthorpe—this time to the latter's discomfort, as he had been caught off his guard. The scientist was a strong-willed man, but this strange Moon-dweller had an uncanny habit of compelling attention when he was addressing one.

"It is advisable," he said curtly, "that you should correctly answer my questions—both for your own sake, and the lives of your men dependent upon you!"

Unwilling as he was to reveal any information about his power-plant, Lynthorpe decided to appear to fall in with the Lunarian's desires, not yet being aware of the invaders' bold intentions. Accordingly, he illustrated the use of the switchboard and control panel and gave further information about the handling of the radio equipment, in the hope that some opportunity would present a chance of his electrocuting Aparo. The latter, carrying his anti-gas helmet in his hand, showed great interest in the apparatus. He was also well aware of the scientist's intention to turn the tables at the first opportunity, thanks to his highly developed telepathic powers, of which his captives were to discover more later.

The chief Lunarian and his assistant, whose name he gave as Kena, proved to be remarkably intelligent and quick at grasping the essential points of the elaborate system. Once, when Lynthorpe attempted to mislead him, Aparo simply turned his eyes upon him, and observed quietly: "That is not true!" Thereafter the Professor, realizing that he was up against a being, who could practically read his thoughts, tried no more subterfuge, but held back as much detail as Aparo's questioning would permit.

"So! A most efficient system, Professor," said Aparo half an hour later. "I understand too, that you were to make an announcement to the world today, were you not? Well, we must not disappoint your very good friends, in Europe, is it not? Yes, indeed, now that I have all the information I need for the time being . . . we must take our first steps *in the subduing of the peoples of this planet!*" And with a short grunt (his idea of a laugh) he stepped to the huge main switchboard, first issuing a short command in his native tongue to Kena and the two guards. The latter indicated by signs that the three prisoners were to take seats at the far end of the room, away from the apparatus.

Aparo, with his assistant's help, then flung down the heavy switches, releasing the paralyzing magnetic influ-

ence which spread at that moment throughout the Northern Hemisphere with the speed of light! The Professor clenched his great hands and glanced, from habit, at the clock—11.20 G. M. T., and the 13th of December. Then, as a thought struck him, he smiled quietly. Aparo looked at him across the room for a few seconds, then his black eyes glinted evilly as he remarked:

"So! You smile—and why? I think I know. You think that your big machines in yonder building will soon run to a standstill for want of attention? I omitted to mention that your men are working the usual spells in your power-house—under the eyes of many of my men, who are carrying *poisonous* vapor-ejectors! It was unfortunate that some of your more impulsive workers—misled by our small stature—attempted violence upon recovering from the first dose of gas . . . the lesson has not been in vain, however! Their bodies have been disposed of—in the lake of boiling mud some distance away!"

"You devil!" panted the scientist furiously. "You murderous animal! There was no need for that, and for—" Aparo spread wide his four arms in the first gesture they had seen him make, and his voice was like the hiss of steam as he said:

"Do you suppose for one moment that a few lives matter to me? Anything which tends to obstruct my purpose on this planet is best removed—once and for all! I suffer you and your two assistants here simply because you may be of use to me in the near future. Your fellow Earth-dwellers are now experiencing an exhibition of the power which this station controls—and will continue to do so for the next twenty-four hours or so, by which time they will be in a helpless muddle and in a reasonable frame of mind to accept the announcement which I shall then make to them! I am finished with you for the present. My followers will escort you to your sleeping-rooms below."

"But what can—" began Alan, with the impetuosity of youth, only to be completely ignored by Aparo, who spoke to the two guards in his own tongue. The three Englishmen were taken outside, where they found two more guards waiting, and down to their sleeping quarters. All three were confined in the Professor's room, and locked in, with Lunarians posted at the door and both windows.

"A nice state of affairs!" commented Matthews, as he took a seat. "It seems that we dare scarcely plan any counter-move without this confounded creature tumbling to our intentions. If the worst does come . . . there's always the magazine switch!" The Professor nodded: "Yes. That is one thing he does *not* know about; but we'll need to exhaust every other possibility before we come to that!"

With the "brains" of the station "kicking their heels" in enforced idleness, and the electrical staff working under Lunarian compulsion in the main power-house, the great Boothia magnetic centre now lay as a silent menace to civilization—the control of which meant unlimited world-power.

CHAPTER IV

TWENTY-FOUR hours later, the insolent announcement made by Aparo, already recorded, through the medium of the Professor's powerful transmitter, was conducted in the presence of his three prisoners, whom he had had brought back to the control room for this purpose. The feelings of the original owners of the station may be imagined.

The misuse to which his apparatus was being put so angered the scientist, that the instant Aparo shut off the transmitter, he lost all caution and sprang at the Lunarian with murder in his eyes. It would have gone ill with Aparo had the scientist's great hands fastened upon his skinny throat, but, fortunately for him, two of the guards in the room raised their vapor-guns and discharged them full in Lynthorpe's face! The latter's forward rush changed into a headlong plunge as he pitched insensible to the floor. At the same time, Alan and Matthews, who had stepped forward with clenched fists, were brought to an abrupt standstill as the instruments were trained upon them.

"You—you fiend!" choked young Lynthorpe furiously. Aparo interrupted him curtly: "Control yourselves! Otherwise I shall have you bound hand and foot—and that is not a comfortable position—and I should not be able to make full use of you then!" The two young men glared helplessly at their tormentor for a few seconds; then with a shrug of the shoulders Matthews bent over the motionless form of the Professor, and with Alan's help lifted him into a chair. While they were thus engaged, the radio receiver, with which Kena was fiddling, gave out the emergency announcement from the Geneva station. As the voice of the announcer proceeded to call upon the League of Nations' representatives to an emergency meeting, Aparo, who was listening intently, muttered to himself, shut off the receiver. Then, putting forth all the power of which the transmitter was capable, he cut in with his second announcement to the world, in which, it will be recalled, he threatened Europe in particular for daring to take steps to circumvent him.

Alan Lynthorpe glowered furiously at the Lunarian leader as the latter, his announcement finished and Geneva successfully "jammed," walked slowly to the control-board and there brought into play the magnetic power once again—there to remain in force until he should be pleased to lift the ban. Aparo next turned his attention to his prisoners.

"You two will be conducted to your power-house," he said, his compelling black eyes fixed unwinkingly upon his two conscious captives. "It is dangerous to have you three here together, and I have work for you to do. You will arrange with your head man in your power-house to take charge of the different watches of workmen there between you. One of you must be in your men's sleeping-quarters while the other is supervising—you understand? Also, if you value your lives, remember that my guards down there carry cylinders of *poison* gas, not the harmless vapor that you have so far experienced. They have orders to kill upon the slightest provocation, so be careful! You two are not so indispensable as Professor Lynthorpe, and should you become dangerous, you will be removed—permanently! Now go!"

He gave the guards some orders in the Lunarian language, and the two young men left the room, accompanied by four of the ugly little creatures wearing gas-helmets, and holding their deadly little cylinders ready for use. After a brief examination of the unconscious Professor, the chief Lunarian slowly stretched himself out upon a pile of rugs in a corner of the room, near one of the electric heaters. The invaders from the Moon

could not readily accustom themselves to the furniture of the station, especially as the chairs were too far from the ground for their undersized legs. Aparo and Kena were barely five feet in height, and the tallest amongst their fraternity. Aparo preferred a low couch of blankets or rugs to the strange furniture, particularly when very much exertion under Earthly atmospheric conditions quickly tired him. He addressed himself to his assistant Kena, who was walking very slowly round the room examining the various, and to him, strange fittings.

"So, Kena," observed his leader, speaking in their native tongue, "we have so far achieved all that was expected of us, and the Earth's peoples are about to enter upon a new era under our rule—and administration. Everything is now ready for the Great One of Luna when he arrives to take up the reins of power and world-mastership which he has so long planned." Kena's dark and prominent eyes, duplicates of his leader's, gazed thoughtfully around the superbly-equipped control room as he made answer: "Indeed, oh Aparo the Wise, you have struck a crafty blow at the pride of these Earth-dwellers. They squabble like children amongst themselves—they are so wrapped up in their little affairs that they forget the greater matters of Time and Space—except men like this one Lynthorpe. Their carelessness has been our opportunity indeed. 'Tis a world of plenteousness—can we but accustom ourselves to its strange air-pressure and climatic conditions."

"True, oh Kena," observed Aparo thoughtfully. "We can live in comfort where these strange creatures find only hardship. There is nothing in these latitudes to compare with Luna's long dark night. . . . We must take our craft and explore this region in detail during the next few weeks. Now, Kena, call a guard to remain inside this room, while you will be free to investigate these other buildings further. I will enter the hypnotic state in an effort to discover what is happening in Europe—and I must communicate with the Great One in any event. Upon no account must I be disturbed! You know the danger of that!"

Kena bowed his ugly head in mute assent, and as his master composed himself for his hypnotic trance, he opened the door and called in two Lunarians who were on guard in the passage outside. To these he gave instructions concerning the recovery of the unconscious Lynthorpe, and then left the room for a quiet tour of the station.

MEANWHILE Alan Lynthorpe had been conducted by two Lunarians to the electricians' living quarters, the remainder of the guard escorting Matthews to the main power-house. The latter, rectangular in shape and built of steel throughout for screening purposes, was undoubtedly the largest of its type in the world at this time. Entry was effected through a small door at one end, this being fitted into a huge sliding door, which allowed for the passage of large machinery. Like the control room, there were but a few observation ports, artificial "daylight" being supplied by large, high-powered "sun-ray" lamps.

Upon arrival inside the building Matthews found, as Aparo had mentioned, a large number of Lunarians posted like ugly little statues around the walls, each complete with gas-mask and gas-gun, and all attired in the skin-tight covering which made them look like a host of evil little goblins. They outnumbered the ten Englishmen on duty by about three to one. The electrical staff worked in four-hour shifts, ten at a time when the magnetic field was in force. At normal times, three or four men were all that were required to tend the running of the smaller motors for the station's lighting, heating, cooking, and radio supply. The work was simple enough to the skilled men, all unmarried and thoroughly trustworthy, who had been recruited from the British staff of the British Electrical Combine, and were prepared to spend the rest of their existence in Boothia if required to do so.

As this escort withdrew from the building after a few words with the Lunarian in charge of the guard, Matthews was approached by his chief electrician and outside manager.

"Well Robson, how do you like your new 'directors'?" asked the younger man. The man addressed, a lightly-bearded, middle-aged giant, snorted as he wiped his greasy hands upon the thick one-piece working-suit he was wearing.

"It's a damned fine thing when we're to be ordered about by a pack of six-limbed insects, who can't fight clean and appear from God knows where! That high an' mighty one who speaks English so queerly has been in here twice since the dirty creatures gassed us all. The ugly little devil ordered me about in a way that made my blood boil—and I couldn't help myself! Those evil, big black eyes of his fairly hypnotized me—br-r-r! They watch our every movement—confound them! Mooney here—" he indicated a rather sour-looking, burly Irishman nearby—"picked up a spanner to bash his Highness with, and in a few seconds the place was half filled with their infernal gas—and poisonous stuff this time too. We've lost four men over that business, Mr. Matthews, and for good!"

Matthews nodded in sympathy with the other's anger. "I'm afraid we cannot help ourselves just now, Bob—and it's no use getting wild about it either. They've got us cornered at present with this infernal vapor of theirs; and as you know now, it is all fatal stuff this time. Do you know what this Aparo is going to use the station for?" and he gave the manager a brief outline of the Lunarians' reason for the appropriation of the station "—and this beauty is expecting a few thousand more of his kind within a few months' time—the last of the Moon's population, according to his talk," concluded Matthews. Robson whistled expressively. "The devil he is! Well then, it's high time that something went wrong with these generators, that's all! We can spoke his wheel that way."

Matthews grasped the manager's arm firmly. "You'll try nothing of that sort yet," he said urgently. "Aparo's a telepathist of the first order, and he'll know whether it's a fake breakdown or not. We certainly could stop the motors at any time, but he has threatened instant death to the lot of us if we try tricks, and you know yourself how much he values a few lives! No, there are better and less clumsy ways than that—if we can bring them off. We are hoping mainly for a chance to electrocute the little fiend . . . at any rate, hold off any rough business for a time. The Professor, as a scientist, is very much interested in these creatures, and may possibly win Aparo's confidence by complete submission—for a time. Meanwhile we'll keep our eyes skinned down here. I see that old Merlin over there is getting peeved about our chat—we'd better look for some work."

They parted in response to signs from the leader of the guard, who tapped his weapon significantly; while Robson eased his mind considerably by a discharge of quite unprintable abuse at him, not a word being, fortunately, understood by the creature.

The Lunarian guard was changed only with alternate shifts of workmen, while outside, apparently quite unaffected by the intense cold, were posted yet more guards around the control building and the workmen's large, one-storied living quarters. A certain number of the Lunarians always slept on board their strange air vessels, the interior of which Lynthorpe would have given much to see, in order to satisfy his scientist's natural curiosity. These crafts practically filled up all the open ground of the settlement, and were capable of ascending and descending in a vertical manner, as Alan and Matthews saw often during the next few days, when the Lunarian Kena frequently went up in one to survey the surrounding country.

In their frequent journeys to and fro between the power-house and "bunk-house," the two young men used their eyes pretty thoroughly with regard to the disposition of the guards, and the fact that not a single door or window was without its armed Lunarian, was certainly not encouraging. Small chance, they reflected, of surprising these vigilant creatures by any kind of attack!

PROFESSOR LYNTHORPE, once more recovered from his second dose of "anaesthetic," sat in the control room, chin on hands and gazing moodily at the indicator dials on the control panel. Across the room Aparo and Kena lay upon their respective couches of rugs, their eyes upon their chief captive; Aparo, no doubt, endeavoring with his uncanny instinct to follow the scientist's thoughts. The usual two guards stood within the doorway, watching the prisoner's every movement, especially when the latter, becoming restless under so many pairs of eyes, occasionally strolled over to one of the observation-ports, or wandered aimlessly around the side benches. Short conversations had taken place between Aparo and Lynthorpe, in which the former had succeeded in obtaining much more information about Earthly matters than the Professor had about Lunar conditions of existence. This was, of course, very annoying to Lynthorpe, who felt that the Lunarian was playing with him, and he was unable to think clearly with those baneful eyes upon him.

The second day of the Lunarian occupation drew slowly to a close, with the future outlook for the Earth very black indeed. The owners of the Boothia station fumed and fretted in captivity, while the Northern Hemisphere struggled under the devastating effect of the widespread magnetic influence, and the Southern Hemisphere found its electrical gear all completely disorganized. All communication throughout the world was at an end until Aparo should be pleased to lift the ban—or until the civilized world accepted his terms.

CHAPTER V

The War of the Shadows

THE early weeks of the first year in the Twenty-first Century found most of the civilized world in a chaotic condition. North America, Europe, and Asia had all been under the full influence of the Boothia station for a period of almost five weeks. The southern continents were finding both radio and telegraphic communication with each other practically impossible, and all other electrical gear was hopelessly upset. Christmas and New Year festivals, the most miserable for many generations, had passed in the universal silence which lay like a blight upon the Earth's main industries.

While the almost obsolete steam-driven sea and land craft were once more in use in the Southern Hemisphere, trade with the northern countries was impossible, as ships proceeding a few degrees north of the Equator entered the magnetic field, and found themselves stranded unless fortunate currents carried them south over the Line (Equator) again into regions where their engines would function. Any northern country had only vague ideas of how its nearest neighbors were faring. America and Canada were, of course, quite unaware that the centre of the trouble lay on their own side of the world, and while the B. E. C. had acquired and despatched two sail-driven racing yachts to risk the Atlantic, it was likely to be many weeks before the New World got the information—if the small vessels ever reached the St. Lawrence!

The League conference, which despite Aparo's threats, had been held about a week after the first application of the invisible Terror, had taken what feeble measures they could to attempt to cope with the disastrous situation. Most countries with a seaboard had managed to amass a fleet of speedy sailing yachts, supplied in the emergency by thousands of private owners, or commandeered if the said owners objected. These vessels were used solely for the transport of foodstuffs; synthetic products of the science laboratories in highly compressed forms. These had always been available before, for use in times of famine, but now they were the people's main food in those countries which had not yet learned to be self-supporting. In these latter lands, despite the endeavors of the yacht-fleet, and animal-drawn vehicles on land, starvation and famine lay not many months ahead.

Some kind of erratic communication was attempted within each country's boundaries by means of carrier-pigeons (well-nigh extinct) and highly-trained dogs. Horseback-riders—where they could be found—were the only reliable means of conveying news between towns. Naturally, such inadequate services were almost useless to a world accustomed to efficient radio news-services, swift air-travel, and the universal use of electricity for almost every purpose. Civilization was, in fact, thrust back several centuries, and the shock was appalling.

The only station which functioned for a few minutes once each week was the Geneva super-radio, and this was merely to cross swords with the mocking Lunarian, when he made his mocking weekly enquiry about the acceptance of his conditions. Immediately after their usual refusal, Geneva found it necessary to shut off their power plant, to save the armatures of all the generators from a burn-out, which happened if the magnetic field was re-applied while they were running.

Numerous sea-and-air-craft which had been far from land when Aparo applied the magnetic power, had been helplessly stranded in mid-ocean during these past five weeks. Many of these unfortunate craft had already perished in Atlantic or Pacific storms, and all aircraft thus caught had become waterlogged and sunk after a few days of floating about the sea's inhospitable surface.

The few surviving liners limped slowly towards the nearest ports at something like three of four knots under sails improvised from their canvas awnings The Lunarians were making it quite evident that human life counted for little in this effort to establish themselves as World Masters, and already the toll against them was terribly large.

In England, Sir James Oliver and his fellow-directors, ignoring Aparo's warning, had revealed their share in the Boothia Scheme to the home Parliament, including the exact position of the power-centre. After more than a week's delay, because of the poor means of travel now available, the baronet and the British Minister involved in the scheme had at last succeeded in laying the information before the Geneva Emergency Control. The latter body, after weighing the pros and cons, decided to call Aparo's bluff by ignoring his threats, and take means to oppose the new despot from Luna. Within a few weeks, the construction of a large fleet of *wooden* sailing ships was begun in a number of European shipyards, the latter not too far apart from each other. Any attempt at steel vessels was, of course, out of the question, and the building of the wooden fleet was pushed forward with as much speed as possible under the restricted conditions; although the lack of power-driven machinery rendered the construction necessarily somewhat primitive in character. The ships were of fine design, specially built with an eye to the speed it was hoped to attain. Weird and wonderful, but none the less effective, hand-worked machinery was devised for the cutting and shaping of the large quantities of wood required for the vessels' hulls.

The position of the centre of the trouble now being known, the main object of the European governments was to land a decent army of fighting-men upon the Boothia Peninsula as soon as was humanly possible. The wooden fleet, being unaffected by the magnetic field, should be able to do this within a few months, providing that Aparo's fellow-Lunarians did not arrive from the Moon first. Should that happen, then it seemed that there would be no alternative but to accept the Lunarian terms, as it was impossible even to defend civilization against an invasion of Lunarian aircraft backed by the crippling power from Boothia. Resistance was, in fact, equivalent to international suicide.

Aparo's weekly radio enquiry had ceased since the laying of the first wooden keels of the new fleet—which indicated quite plainly that the Lunarian leader was well aware of the steps being taken against him. For some time this ominous silence alarmed the Geneva Emergency Control, but when six weeks passed without any further news from Aparo's, or in fact any sign whatever, except for the continuation of the power ban, a feeling began to spread that Aparo's threat had been "bluff" to prevent active opposition. While the new fleet was building, scientists in all countries were frantically endeavoring to find some means of locomotion which would be unaffected by the intense field of magnetism. The latter however, so hampered and in some cases rendered dangerous this line of investigation, that little was expected of it.

In North America and Eastern Asia, complete inactivity prevailed (apart from scientists' investigations) so far as any attempt to counteract the invisible power was concerned Not knowing the seat of the trouble, and cut off from any speedy communication with the Old World, they remained at present in complete ignorance of the tremendous manual activity going on in Europe. As the B. E. C. had done in Europe, so a number of bold volunteers did in America. Several speedy sailing yachts were despatched for Europe to find out how things were being affected there, manned by daring spirits prepared to risk the Atlantic without any reliable compass other than the stars.

These craft, like the two B. E. C. yachts, were as yet somewhere in mid-Atlantic, enjoying favorable weather, and looked like eventually achieving their object Then with appalling suddenness, Aparo took action! Having waited for six weeks in complete silence until preparations for an offensive against him were well under way, and Europe lulled into a false sense of security by his long inaction, he despatched two of his peculiar air machines in charge of Kena to teach the presumptuous Earth-dwellers a severe lesson.

As there was no limit to the height these machines could attain, it was possible for them, weather conditions permitting, to obtain a view of thousands of square miles of the great sea beneath. Thus it was, after two hours' hurtling across the Atlantic at a speed approaching a thousand miles an hour, that the Lunarian espied the flotilla of American yachts far below, and towards the south. An alteration in course, a slackening of speed, and a descent of many miles, brought their craft directly over the yachts at a height of a few hundred feet. There was the scream of descending missiles, a series of well timed explosions above the sea's surface, and in a few minutes the contingent of small vessels was enveloped in a dense-brown, poisonous fog. With every soul on board them either dead or dying, the yachts swung in all directions, swaying helplessly at the mercy of the wind, and above the murderers sped rapidly away for Europe—barely an hour away. Fifteen minutes later the two European yachts shared the fate of the American contingent, as they unfortunately also lay in Kena's path. Any unlucky drifting liner which lay in their path suffered the same fate, Kena using gas-bombs only, as his explosives were reserved for the main cities he was on his way to visit, at his master's command,

IRELAND received the first intimation of danger when the two strange-shaped craft, spinning horizontally about vertical axes, descended suddenly upon Belfast out of the cold, cheerless February sky. Hovering over the port for but a few minutes until the shipyards were located, the Lunarians descended low enough to see that a number of wooden ships lay almost completed on the stocks One single explosive missile was enough to wreck six weeks' work in each shipyard, followed by a rain of their deadly poison-fume bombs, and within a short time thousands of helpless people were choking to death, unable to lift a hand to oppose their murderers.

Kena was in telepathic communication with his master in far-off Boothia, and in obedience to Aparo's commands, the two machines next shot away towards Great Britain. Then there commenced a swift and terrible tour of insensate destruction, the rain of death-dealing missiles descending in turn upon the principal cities and shipbuilding centres throughout Western Europe The Lunarian craft were quite immune from any anti-aircraft weapons which were fired at them, as the unfortunate Europeans found to their cost. The intense

magnetic power in force had a peculiar and unforeseen effect upon all steelwork, rendering it as brittle as glass; with the result that whenever an attempt was made to discharge a weapon, it burst into a myriad pieces, killing all who stood near—as several military centres discovered when attempting to fire at the two strange machines above them.

Little imagination is necessary to visualize the dreadful trail of death and chaos which lay in the wake of the Lunarian cruise up and down Europe. In the various shipbuilding centres, those who escaped the deadly gas, thanks to an emergency issue of masks from various chemical works, raved and blasphemed as the work of the past six weeks lay burning in the stocks, or at the quays; or were shattered by projectiles of tremendous explosive power, the like of which had not been seen on the Earth before. Through all drifted the poisonous brown fog, one breath of which meant instant death to man or any living thing. Futile attempts were made in all countries to fire their defense batteries—to the instant destruction of guns and gunners alike. At the numerous commercial and military aerodromes the mechanics and pilots alternately wept and cursed as they tried in vain to start their useless motors; and overhead spun the giant shapes, their crews mocking the misery below them.

The distracted victims even resorted to the forlorn measure of ejecting poison gas from their huge storage tanks at an extremely high pressure, which flung the deadly vapor to a height of nearly three hundred feet. This unexpected sally certainly took the Lunarians by surprise, but did no harm as they were, of course, masked, and able to rise easily out of harm's way. To the majority of the Earth-dwellers it seemed indeed that the end of their civilization had come, lying there helpless at the complete mercy of their mocking foes. Then in this darkest period of European history, the apparent miracle happened . . . and occurred with startling suddenness.

Kena's craft were heading for Eastern Europe, where lay the two Powers, mentioned earlier in these records as being on the verge of declaring war upon a certain powerful neighbor of theirs, before the upset caused by the Lunarian invasion. In these States things were moving rapidly as the two Lunarian machines approached their borders, for the authorities there suddenly discovered to their amazement that the magnetic field had ceased to exist This was first brought to their notice by Geneva station coming quickly upon the ether with the news of the tour of destruction even then proceeding throughout Europe, and the warning that the invaders were at that moment headed for eastern Europe. Within five minutes the whole radio world had the news of the disaster, as the Geneva call-signal could automatically start-up any receiver left tuned to its frequency.

The two Powers mentioned, with huge fleets of military aircraft lying in idleness, which had been intended for the expected European war, immediately launched these upon the air against a different enemy than their builders had once intended them for. Their anti-aircraft defences were ready for action by the time their air fleets were high up in the sky, awaiting the Lunarian craft. Those countries already cursed by a visit from Kena flung what fighting 'planes they still possessed into the sky in a frantic attempt to follow the speedy Lunarians, of whose position they were kept informed by radio messages from those unprepared countries over which the two craft passed.

Meanwhile Kena, in his own compartment on board his strange craft (of which more later), was growing uneasy at the sudden cessation of telepathic communication from Aparo, and tried in vain to get into mental touch with his master. Although sensitive in a telepathic sense so far as reception of impressions from one of his own race went, Kena, as one of the minor Lunarian leaders, was not trained to be responsive to the doings and thoughts of the Earth-dwellers in the manner that Aparo and other mighty leaders of his race were. Quite unaware, therefore, of the recent removal of the crippling force from the world far beneath him, he headed his two machines, at a moderated speed of about three hundred knots, for eastern Europe.

STANDING beside the Lunarian who was controlling his leading vessel, Kena almost jumped with surprise as he gazed ahead through the darkness which had just fallen. With the outer hull of their vessels rotating fairly slowly, and moving at a steady pace just above the cloud banks, the Lunarians were puzzled to see just ahead and beneath them, sudden flashes of light on the clouds, as though the latter were floating across the path of an invisible ray—which was just what was happening, though Kena could not be expected to realize that, with his limited knowledge of earthly matters. While the startled Lunarian was hesitating whether to raise his craft or not, his steersman touched him and pointed silently out of a side port. Kena's eyes nearly left his head as he beheld his companion vessel, usually almost invisible, now exposed in a brilliant light—but no sign of a searchlight ray came from the earth beneath! Astonishing as the phenomenon appeared in Lunarian eyes, the explanation was simple enough to earthly minds. The Lunarian machines had hurtled into the invisible ray trap set for them by the States over which they now hovered. Delicate instruments, both on land and in the European aircraft which hovered several miles above, revealed the presence of the invisible and noiseless Lunarian spheres. Immediately the sky was swept from above and below by numerous invisible "searchlights" which, by the propagation of infra-red rays invisible to the human eye, instantly revealed the presence of any solid object in their paths, fog and clouds being no barrier whatever. Thus the source of the light remained hidden from the Lunarians.

Kena, whose own vessel was so far still undetected, and who was by no means prepared for an aerial battle, snarled an order to his control-man, and climbing in a long slant, the machine hurtled at terrific speed into the high heavens. Its companion craft also attempted to follow its example, but the invisible rays still held it in full view of the now descending European airplanes. The latter buzzed angrily around the rotating sphere as it slanted upwards, pouring at it a rapid stream of explosive bullets—which made not the slightest impression on its hull or the bullet-proof observation-ports therein. The Lunarian, with his superior speed, looked like getting clean away; or so Kena thought, as he watched the fight below his own vessel. The attackers, however, were by no means finished yet. Above the noise below, Kena recognized a new sound—a throbbing roar from machines very much closer than the European 'planes,

which were dropping far behind now. Straining his prominent eyes into the darkness behind, he saw several dark shadows without navigation lights, such as the other airplanes had carried, gaining steadily upon his second machine, which was still illumined by the mysterious light. Kena released his remaining explosives at the menacing shadows as he climbed quickly. The majority of his missiles screamed their way to the earth far beneath, but one chance bomb actually struck one of the racing shadows. The devastating crash which resulted, although several hundred feet below him, caused his machine to rock dangerously, while the second machine instantly lost way as it pitched about in the rush of air.

Kena was startled. Knowing full well the explosive power of his own projectiles, he felt sure now that the rending crash below indicated that the pursuing shadows were traveling magazines. They were, in fact, pilotless 'planes filled with high explosives, and guided by radio-waves from the fighting airplanes far behind. Kena, now many miles above the earth, watched with renewed alarm as his other craft swiftly altered its course every few seconds—but was still pursued by those small, relentless shadows, which gained upon it every second. The end was sudden, and in European eyes, well-deserved. The touch of a key in one of the distant control planes, and one of the midget magazines exploded within a few yards of the spinning sphere. Even its tough shell could not survive that, and its pace abruptly slackened, while the outer shell gradually ceased to revolve. Gaping holes showed in its surface as it commenced to sink earthwards. A second shadow was guided right at it, and the resulting rending explosion left nothing whatever of the Lunarian machine, except a few pieces of shattered material dropping through the clouds.

Kena headed his remaining craft to the north-west at top speed, ere the still-searching enemy should also light up his machine, when he knew that all would indeed be lost. Keeping at an altitude far beyond the reach of many European machines which he occasionally heard coasting about beneath him, the Lunarian made all haste for Boothia, his evil little features set like a mask, as he wondered what had happened in that distant peninsula, and why Aparo did not communicate with him. Leaving his control compartment, he retired to his own room, there to attempt telepathic intercourse with his other distant master, the Great One of Luna, who might be able to guide his next move, if Aparo was not accessible.

CHAPTER VI

Aparo Gets His Reckoning

IMMEDIATELY after the departure of Kena upon his murderous mission, Aparo had gloatingly outlined the fate which awaited the Europeans, to Professor Lynthorpe, and enjoyed his chief prisoner's dismay at the news. There followed a long silence in the control room as Aparo composed himself upon his rugs in one corner; there to keep in telepathic communication with Kena. Soon his eyes closed, and he was wrapped in a deep, hypnotic sleep or trance, self-imposed.

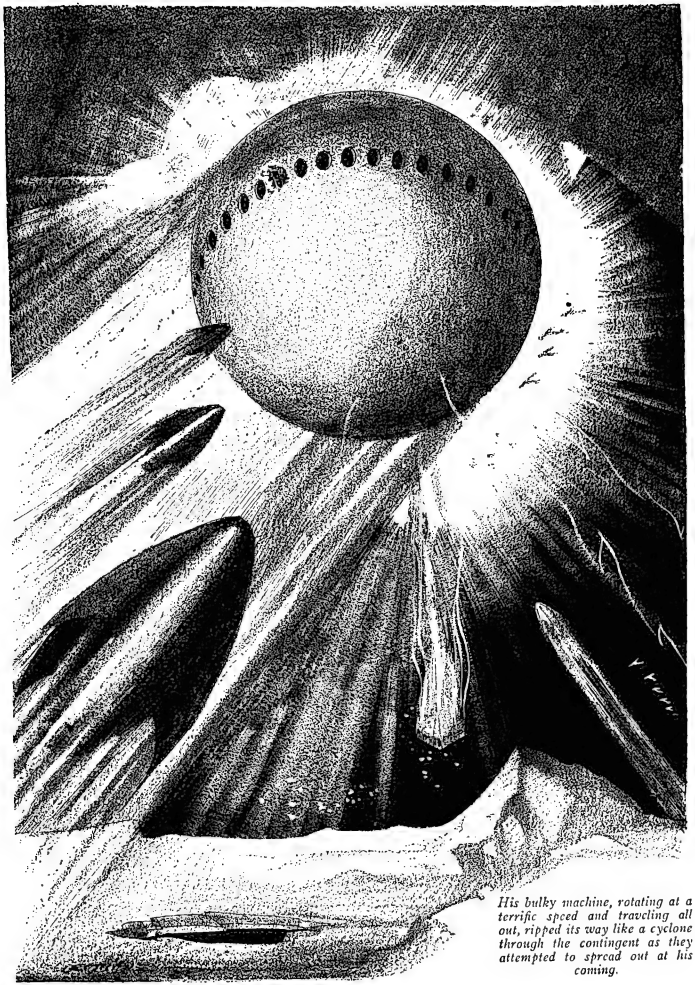
Lynthorpe sat smoking one of his powerful cigars—a habit which Aparo still allowed him, although unable to understand it—and watching covertly his two guards standing just inside the closed door. He reflected that now, if ever, was his chance to attempt some reprisal, with Aparo in a trance, and Kena safely out of the way. They were the only two of these creatures at present on the earth who possessed sufficiently developed powers to be telepathically aware of other men's intentions—and Aparo was too busy at present to bother with his prisoner, evidently depending upon the armed guards to deal effectively with him. The Professor was at liberty to move about the room—provided he did not approach the control panels at all, or attempt to touch the radio gear.

Sitting there, quietly smoking, he flogged his brain for some method to trick his guards. By continued good conduct during the past weeks, he had given even the keen Aparo the impression that he was more or less resigned to accept the turn of events. By emphasizing the interest he felt in these Moon-creatures and their planet in his conversations with Aparo, he had given the impression that he was simply a keen scientist who had almost forgotten the reason for the presence of the Lunarians on this planet, and also the reason for the building of the Boothia station. Lynthorpe had not seen either Matthews or Alan, although he had Aparo's assurance that they still lived.

He rose slowly to his feet and wandered carelessly about the room, reflecting bitterly that he dared not even try to 'phone his own power-house. He paused before an observation-port to take yet another good look at the single Lunarian air machine which lay outside, and never failed to arouse his curiosity. He had been unable to extract much information from the Lunarian about his craft, except that it was composed of two shells, the inner one always fixed in relation to the outer, which revolved at high speed on the universal planetary system, becoming faster, of course, as the speed of the machine increased. Lynthorpe had been unable to find out the means of propulsion, or how the interior of these miniature "worlds" was kept in a state of equilibrium when in motion across space.

The Professor sighed, and looked across the room at his ugly little guards. The latter, long since convinced that their prisoner was more than a little mad in some directions, watched him closely as he approached them slowly and very deliberately. They raised their gas-cylinders threateningly when he was within a few feet of them. Suddenly, without the least warning, his hand clutched at his head, and he collapsed limply at their feet, where he lay to all appearances unconscious. The two Lunarians looked at each other in startled surprise, one pointing to Aparo's corner as he muttered to his companion. The second shook his head firmly—they were under strict orders not to disturb their master's telepathic trance—and after a long look at the body at their feet, one of them laid down his weapon and bent over the scientist, gingerly removing the latter's still-smoking cigar. It was evident that the creatures were firmly convinced that the peculiar smoking habit of this Earth-dweller was to blame for the latter's sudden collapse.

Together they leant forward over the Professor for a closer inspection. Instantly the Professor's eyes opened quickly and his great hands grasped the puny necks above him, bringing the two large skulls together with a terrible crack! Without a sound the ugly little brutes dropped senseless—or lifeless—to the floor, one of their weapons discharging a little of the white vapor as it hit



His bulky machine, rotating at a terrific speed and traveling all out, ripped its way like a cyclone through the contingent as they attempted to spread out at his coming.

the floor. Lynthorpe promptly rolled clear of the dangerous gas, jumped to his feet and opened the nearest port. Then appropriating one of the unconscious guards' masks, he hastily donned it, and turned to find that Aparo had regained full consciousness—probably influenced by the plight of his guards. His big black eyes were fixed unwinkingly upon the scientist, the hypnotic glare striving to hold Lynthorpe's gaze. The latter, realizing that if he tried to meet that stare he would be done for, lowered his head and charged at the creature, striking him full in the chest. Lynthorpe felt Aparo's four cold and clammy hands feebly grasping at his head, and with an involuntary shudder his big hands closed firmly round the uncanny creature's thin neck. From that moment Aparo had simply no chance whatever, and in a short time Lynthorpe hurled the lifeless Lunarian from him with a gesture of infinite disgust.

THE scientist then sprang for the control panels, and hurled up the massive switches which were to release the world from its helpless condition. Next he locked the door of the control room as a precaution against interruption, and removing his gas-mask, he set his radio transmitter pouring forth at full strength the automatic call-signal, which would awaken the world's stations to the fact that the magnetic ban upon their activities no longer existed. Within a few minutes Geneva was in direct touch with him through the ether, and the Professor gasped with relief as the familiar image of their announcing studio appeared upon his televisor screen.

"Now listen, Geneva, and re-radiate this right away," spoke Lynthorpe into his microphone. "One of these animals is over there somewhere with two of their machines—" here Geneva interrupted him with a terse reply to the effect that they already knew that to their cost, "—indeed! Then they're speedier than I imagined. However, here is more important news. The real leader of these Lunarians, whom they call the Great One of Luna, is already on his way to the Earth with the remainder of his race. It appears to be a general evacuation of the Moon in favor of the Earth, where these creatures intend to live at the expense of our labor. How long they will take to reach here I cannot say—and their Aparo the Wise is no longer in a condition to tell me anything! It will certainly be only a matter of days at the most—maybe only a few hours! Should they be so early, then I may be forced to destroy this control house—and the fruit of many years' preparation. I hold only the control room, and the rest of the station is still in Lunarian hands—at present.

The leading nations of this earth will realize the value of this power-centre as a preserver of peace in normal times. It is for their own good that they should despatch their air fleets to this district to prevent these invaders from ever again attempting to set themselves up as world-rulers. I am assuming, of course, that they will arrive here in Boothia, but the capital cities must henceforth be on their guard against this coming aerial invasion. The Lunarians will be well aware of Aparo's death, by telepathic means, and it is naturally impossible to even guess how they will act next. I appeal, therefore, to those nations which can spare the machines, to send them with all speed to the Peninsula of Boothia Felix, latitude. . . ." The Professor closed with the exact position of his station, and leaving his receiver tuned to Geneva, he listened for a time to their communications with the other main radio stations and Government stations throughout the world.

The replies he heard evidently gave him satisfaction, for he hummed to himself as he paced up and down the room, and considered what his next move was to be. He could not ring up the power house, as that would put the Lunarians on their guard down there, and in any case neither Alan nor Norman Matthews would be allowed to answer the 'phone. He had not set eyes on either of his assistants since they had first been taken away from the control room many weeks ago. He was ruminating upon how they could be faring down there, when he was suddenly interrupted by the rushing sound of power from his receiver as Geneva called him up once more.

"Professor Lynthorpe," said the head announcer, "I have authority to inform you that within a few hours the air fleets of Canada, the U. S. A., Asia, and Europe, will all be on their way to Boothia! The governments concerned fully appreciate the dangers of the situation, and trust that you will be able to hold your control room until the fleet arrive. There is one point. You said that there were *two* Lunarian craft on their way to Europe? Well, two were seen earlier in the evening, but after darkness fell only one was revealed by the rays. You will be glad to know that we completely destroyed that machine."

"There must still be one at large then," commented the Professor. "That is dangerous for me. I suppose that Kena will be making back here now—confound him!"

"Kena?" queried Geneva.

"Aparo's chief assistant—in charge of those two craft," replied Lynthorpe briefly. "Thank you for the warning, Geneva. I'll do my best from this end. *Au revoir!*"

The Professor, pulling furiously at another large cigar, strode rapidly to and fro, ignoring the three lifeless bodies lying about the floor, as he cogitated his next move. He could shoot a number of Lunarian guards from the observation ports after a visit to the magazine below—but that would not help in the least to gain control of the power house. He must act quickly, in any case, before the remaining Lunarian machine returned. He was determined to wipe out these creatures like so many vermin, after hearing from Geneva the account of the European massacres, but was not disposed to risk losing too many of his own men in the process. At last, decided on a course of action, he quietly unlocked the door, and stepped silently out into the passage, which was deserted. Listening intently, he slowly descended the stairs, having first donned the borrowed gas helmet, a simple affair which seemed to consist mainly of a filtering apparatus.

In the semi-darkness at the stair-foot he ran into the arms of an astonished couple of Lunarians, who were guarding the magazine, and who promptly discharged their instruments at him. He laughed grimly beneath his mask as, following his usual method of handling the small creatures, he seized them and banged their big heads together with sufficient force to break their thin necks. Without the advantage of their gas against unprepared opponents, the Lunarians were physically no match whatever for the smallest Earth-dweller; and Lynthorpe was by no means small!

Flinging the results of his handiwork aside, he quickly entered the storeroom, and made his preparations. Five

minutes later he flung open the outside door of the building, summarily disposed of two other guards with the butt-end of one of the automatics he carried, and was well on his way to the power house over the snow-covered ground in the darkness before the guards outside the men's building realized who he was. There arose instantly from the Lunarians' throats a shrill prolonged whistle of warning for the benefit of their fellows inside the power house. The Professor cursed as he ran in the biting air—would he be in time to save his men on duty?

Inside the main power house, Robson and Matthews, who were not far apart when the shrill warning was heard, edged their way unnoticed to a position within easy reach of the entrance. The leader of the guard gave a sharp order, and the ten men on duty, together with the two mentioned, found themselves covered by the menacing nozzles of the Lunarian gas instruments. Robson muttered as he laid down the heavy spanner which he had just lifted, and they waited, tense, for the next move. The leading Lunarian moved slowly towards the door—which was suddenly hurled open, admitting the breathless Professor and a steady stream of bullets from the automatic he held in each hand!

"Guns in my pockets! Quick!" he roared to Matthews, who needed no second bidding, and quickly joined in the fray. The Lunarian leader and about twenty of them nearest the door went down like ninepins. The remaining dozen or so discharged their deadly weapons ere they, too, were shot down. The deadly brown fog was spreading rapidly across the big building, and the men were dragging towards the door two of their comrades who had collapsed under its influence.

THERE'S scores of them outside. Take some of these—and use them!" shouted Lynthorpe, as he handed Robson and Matthews some small grenades, originally intended for breaking up the frozen ground of that region. The great sliding door was wheeled open, and the icy breeze which swept in commenced to disperse the gas. The eleven desperate men and their two unconscious comrades were now just outside the building, and awaiting the advance of scores of Lunarians who poured out of a lower door of the one air vessel which still lay in the enclosure. A further and unlooked-for complication appeared in the form of a number of dark shadows which issued from some upper door in the hull of the machine—and floated about in the semi-darkness above! The Professor gaped at these latter for a few seconds before it dawned upon him what they meant.

"See!" he cried to Matthews. "That's what their extra pair of arms are used for! They've strapped mechanical wings to them! Well, hold the fort here, and don't let them get near enough to use that gas! I'm making for the sleeping-quarters, to stop them playing any tricks there!"

Protected by his mask from the gas discharged at him, the Professor hurled himself at top speed through the oncoming Lunarians, shooting them down on all sides, and cracking the skulls of the nearest with his gun-weighted fists. The little band in the shadow of the power house, all without masks, and with but two automatics and a few grenades amongst them, waited quietly until the Lunarians were within about twenty yards of them—and it was seen that the Professor had safely gained the doorway of the men's building. Then, while Robson and Matthews carefully picked off the flying creatures in the air above them, a third man flung two grenades into the crowd before them. The bombs exploded with terrific force, causing two great gaps in the mass of slowly-moving creatures. With muffled shrieks the remainder wheeled about, and with no leader now to guide them, labored their way once more into the great air machine, while the flying members of their band, finding it impossible to approach the Englishmen to use their now inadequate gas weapons, also returned to the entrance near the top of the machine.

"Come along!" Matthews yelled. "We've got to stop this thing rising! If they get up above we're done for!" The same thing had evidently occurred to the Professor, for he had quickly followed the Lunarians to the very door of their vessel, and by shooting through it, prevented them closing it.

"Give me a grenade, quickly!" he snapped, as his men joined him. The missile—their last—was handed to him, and waving them all back, he first shot down a Lunarian in the act of closing the sliding door, then hurled the bomb straight into the interior of the vessel. He immediately took to his heels after the rest of the party, and in a few seconds there was a muffled roar from the inside of the big craft. A second later this was eclipsed by a tremendous crash which seemed to split the huge globe in several directions, followed by a blast of displaced air which flung the Britishers all headlong in the snow.

Alan and the thirty or so men who had been imprisoned in their building ran out and joined their comrades, some of them lifting the two unconscious men lying outside the power house and conveying them into their quarters. The Professor and his companions, all rather breathless, gingerly picked themselves out of the dry, soft snow—all fortunately unhurt.

"Everybody all right, dad?" asked Alan of his father. "Good. I reckon that there's not much of the Lunarians left now!" Lynthorpe looked around the now silent station, and at the wreck of the once spherical air machine. "That grenade must have set their magazine exploding," he remarked. "It's a good job that they did not get up above us—and a thundering lucky thing that it wasn't any nearer the control house and *our* magazine! Now, men, listen here. That little brute Kena will be back soon with the only machine they have left. Mr. Matthews will deal out rifles from the magazine, and it is absolutely necessary that each one of you supplies himself with a mask—which you will get from the remains of these creatures lying around us. This is no time to be squeamish. Mr. Robson, you will take the usual shift in the power house—but listen for the alarm. Mr. Matthews will stay with the remainder of the men in their quarters until the time comes to act. Alan, I want you in the control room. That is all now. Everyone to his post!"

There was no sign of a single live Lunarian anywhere as they hurried to their respective buildings after first receiving supplies from the ammunition store. Their air vessel was a complete wreck, the whole hull having caved in when their magazine went up, but there was no sign of fire inside—the machine apparently being constructed of non-inflammable material.

THE solitary craft containing Kena and his few followers cautiously approached the Boothia power centre at a great height and very much reduced speed.

Kena was sufficiently receptive telepathically to be well aware, but in a vague way, that all was not well with his master Aparo and the other Lunarians below. The information had reached him from the Great One of Luna, who was at that moment hurtling at terrific pace across the silent void between Moon and Earth, accompanied by a large fleet of machines containing the few thousand surviving inhabitants of the Lunarian planet.

Watching intently the large white plateau far beneath, Kena dropped his craft steadily towards it. Nothing happened. No sign of life below, and the dark blot of the wrecked air vessel lying between the buildings gave no hint in the darkness of the state it was in. Emboldened by its presence and the stillness, Kena allowed his vessel to sink to within two hundred feet of the metal screen which encircled the station, and hovered there. Suddenly, from the small tower which surmounted the control house, the beam of a single searchlight shot through the darkness and focused itself upon the hovering machine. A second later Kena found his vessel further illumined by two other smaller rays which appeared to come out of the sky from different directions. The latter issued from two of the Professor's airplanes which were also fitted with apparatus enabling them to hover fairly quietly in the darkness. At the precise moment of concentration of all the rays, Kena heard the roar of racing engines as the 'planes made for him at top speed.

That was enough for him. He had no explosives left on board, but loosed off a few gas missiles upon the station as he shot his globular craft into the highest heavens. The two 'planes, unable to cope with the speed of the Lunarian, swept gracefully around the station after a hopeless attempt to follow him. Kena, however, furious with rage at the outcome of the Lunarian scheme, had by no means finished with them yet, as they discovered a few minutes later.

With a shrieking of air past its revolving shell, the Lunarian returned like a bullet from above, making straight for the two 'planes coasting slowly along together! Norman Matthews, piloting one 'plane, swung her clear by a matter of seconds, while his observer poured a stream of machine-gun bullets into the Lunarian's ports as he whistled by. The second British 'plane was not so lucky, however. The revolving shell of Kena's charging machine caught it a glancing blow—which at that speed was quite sufficient to fling it like a toy to one side ere it plunged to the plateau below. These direct charging tactics of the solid-encased Lunarian were something new, and dangerous! So, as Kena swept his vessel upwards once more, the remaining four 'planes of the station took the air, after a short run across the plateau upon their specially-fitted snow-runners.

The five machines now in the air spread out to all points of the compass as Kena swung his menacing craft amongst them. Then, at a given radio signal, they shot round in their tracks and converged upon the Lunarian, their machine-guns peppering the spherical monster as they approached. This was too much even for the raging Kena, as he could not charge them all at once; so, emitting clouds of poisonous gas from his storage tanks, he once more streaked upwards and in a few minutes had vanished at top speed into the darkness.

An hour or so later, in response to a very definite telepathic message from his approaching leader, Kena landed his machine in a desolate region in the North-West Territory, there to intercept and delay, if possible, the combined American and Canadian air fleets which, he was informed, were about to start for Boothia.

Meanwhile, at the power-centre, the Professor found himself with another four men less, as the two gassed in the power house had succumbed in addition to the two lost in the wrecked airplane—a total of eight men since the Lunarians' arrival. Lynthorpe and his staff held themselves in readiness for the desperate trial they knew to be before them, should the main body of Lunarians arrive before the air fleets advancing to their succour.

CHAPTER VII

Professor Lynthorpe Makes a Sacrifice

SEVERAL hours after the Professor's radio appeal to the world, various air fleets had combined and were hastening towards Boothia Felix from all directions, and all were in continuous radio communication both with each other and their destination. The first in the air were the large fleets of Canada and the U. S. A., which winged their way northwards at top speed. Beneath the main fleet, and traveling at the same speed, were a number of radio-controlled pilotless 'planes, such as Kena had already encountered on his European visit. These were directed from certain machines which traveled in the centre of the main body, protected from molestation by their fighting 'planes on all sides.

This formidable contingent thundered their way steadily across the desolate, gale-swept stretch of Hudson Bay, at a rate of five hundred knots—their maximum at their present altitude of nearly five miles. At that height, the feeble light which was dawn on the Earth's surface further south was illuminating the upper atmosphere, and such clouds as were about, lay far below the airplanes. On board the latter, which were flying in close formation, their sensitive instruments suddenly indicated the near presence of a strange craft. Word was passed by radio to spread out—but too late!

The cunning Kena, though possessing only one craft, was determined to make the best use of the surprise element, and had cruised silently about, well out of sight at an altitude of nearly twenty miles, until he sensed the approach of the fleet he was awaiting. Descending silent and unobserved to within a few thousand feet of the unsuspecting 'planes, and noting carefully the position of the traveling "magazines," he suddenly swept down upon them out of the blue. Having run out of explosives, and his only other weapon being his store of poison gas, he was adopting the charging methods which he had employed earlier at Boothia—with this time the advantage of the surprise attack.

His bulky machine, rotating at terrific speed and traveling all out, ripped its way like a cyclone through the contingent as they attempted to spread out at his coming. A number of unfortunate 'planes hurtled earthwards, their occupants taking to their parachutes. It was fortunate indeed for these men that they were masked, thanks to the warning messages from Boothia, for Kena's craft was throwing out huge clouds of the brown, poisonous gases as he swept under them. The Lunarian was too close for the easy manipulation of the flying

magazines against him, and several of these were already dropping steadily, as the machines controlling them were smashed on the Lunarian's first rush. It was not long either, before the Americans discovered that their machine-gun bullets were useless against the attacker.

Carefully avoiding the tier of explosive 'planes, Kena charged a second time—this time from the side of the still swiftly-traveling fleet. Another half-dozen machines were smashed to pieces, and then Kena noticed that the pilotless 'planes were being rapidly brought up towards him, and recalling the speed of the similar European messengers of death, he continued to shoot upwards to terrific heights. At that moment there came to him a mental communication from the Great One of Luna, bidding him hasten to Boothia.

Far below the Lunarian, the Americans received an urgent radio message at the same moment from Lynthorpe: "Hurry. The Lunarians have arrived in force. There's some monkey business afoot I don't understand. They are not attacking yet, but there's something strange in the air—I can feel it . . . my assistant has collapsed now, there is something wrong in the power house. It isn't gas this time. Hurry!"

Keeping their pilotless machines both above and below them, the somewhat depleted fleet reached a higher altitude to increase their speed, and found that the Lunarian was swiftly vanishing into the northern sky. In the Commander's cabin a small and anxious group watched the small television screen as they listened to the Professor's appeal. The figure of Alan Lynthorpe lay on the floor of the Boothia control room, while his father stood in the foreground speaking into the microphone. Silently the distant aerial spectators watched as the door of the control room slowly opened and Norman Matthews walked slowly into the room, passing his right hand over his head, and moving like one asleep. Lynthorpe, leaving his transmitter open, turned to speak to his assistant.

The watchers saw the expression of amazement which passed over the Professor's face as he gazed at his assistant. No word passed between them, and Matthews walked steadily across the room towards the control panels as if his employer did not exist.

"My God! He's intending to apply that magnetic power!" breathed the watching Commander, as he grasped his nearest companion's arm fiercely. True enough, Matthews, who was under the hypnotic influence of the Great One of Luna, was about to bring into operation the magnetic field, which would, of course, immediately bring down all the air fleets now hastening to Boothia. They watched tensely as the Professor sprang forward and grasped Matthews roughly by the shoulders, pulling him quickly away from the switchboard and shaking him firmly. Then he bent forward and repeated something many times into the younger man's ear, the distant watchers hearing only a dull murmur. The Professor's counter-suggestions—he knew something about hypnotism—gradually brought Matthews out of his trance, and he looked dazedly around as his own mind re-asserted itself. The Professor stepped to his microphone and addressed his listeners.

"Hello! Commander Rickard—" then, as the leader of the Canadian-American fleet replied, continued: "—I presume that you witnessed that example of distant hypnotism? Well then, you realize what we're up against at this moment. Their fleet—scores of these spherical vessels—is lying barely a mile away. This semi-supernatural Great One of theirs, as you have witnessed, is trying to get us by telepathic hypnotism. I am on my guard, but my son and Matthews seem readily susceptible to this creature's powers, the full extent of which I am feeling uneasy about. I trust you get here in time to save the station, otherwise . . ." The scientist concluded with a shrug of his big shoulders.

WITHIN the Boothia control room Lynthorpe, leaving his radio apparatus open in tune with those of the hastening aircraft, turned around just in time to see Matthews sink slowly to the floor, unconscious. The distant Lunarian had exerted his powerful influence once more—and with more effect this time! Lynthorpe cursed furiously to himself. Both his assistants unconscious, no reply to his frantic telephone calls to the power house and the men's building; he himself dared not leave the control room, and already he could feel the insidious influence of the Great One of Luna robbing him of the power to think clearly! The room began to reel around him—he told himself desperately that he must lock the door, and staggered towards it. It opened slowly, and he started backwards at the apparition on the threshold.

He did not doubt the six-limbed Lunarian before him was none other than the much-heralded Great One of the Lunarians. The creature, taller than any the scientist had yet seen amongst them, and wearing a single robe above his skin-tight clothing, possessed the terrible eyes of the late Aparo—but with an appalling power behind their unblinking stare. Lynthorpe was normally a man of iron purpose, but this Being no flesh-and-blood human could resist for long. The Professor felt this instinctively as he tried to keep his brains from reeling—instinctively also, he knew with appalling certainty that the end had come.

The Lunarian stepped into the room—alone. The slight movement allowed the Professor to collect his scattering senses, and he took several steps backward towards a small switchboard to the left of the main control panels. The strange magnetism of the creature, however, kept his eyes towards the door, but with his hand behind his back, the scientist grasped the heavily-insulated handle of the switch which connected direct with the magazine in the bottom of the control building. In a deadly slow, quiet monotone the chief Lunarian spoke:

"Professor Lynthorpe, you will not move that lever. You *must* not move that lever. You must do exactly as I command you to do. You would not be so foolish as to destroy yourself—and your life's work! You must give way to the inevitable—this must come about. You are my prisoner. You will do as I tell you. You will go to that control-board and apply the magnetic power—now!" The reason-robbing voice of the master of suggestion ceased as he waited to see the effect of his words. The sweat of intense mental effort glistened upon Lynthorpe's forehead as he struggled against the creature's uncanny influence, which was helped by the deathly silence in the control room.

"This station is entirely in my hands," continued the Lunarian. "You can serve me by obeying my commands—not resisting me as you are trying to do now. Take your hand from that lever!" The Professor obeyed like one in a dream, his eyes dropping before that compelling gaze. The Lunarian paused in triumph for a

minute, before continuing: "So! At last you acknowledge me as your ruler. Now, as you understand that control panel, *apply that magnetic power at once!*"

Lynthorpe slowly lifted his dark eyes to meet those of the Lunarian, and the latter started back in alarm at the scientist's expression. The Professor was no longer master of himself, but it was obvious that neither was he quite fully under the Lunarian's will, as his final words showed: "You are slowly robbing me of my self-control, and given time, you would no doubt gain your end. I hear your men coming outside now to seize me, and so help you to completely hypnotize me into submission. You have made it quite clear that I must sacrifice the world's fleets now hastening to my aid—but too late now, except to punish you creatures. . . ." He paused as a number of Lunarians entered the room. "Listen, oh Great One of Luna—" he continued, his powerful voice rising to a roar, "—it seems that I must go, to save civilization! Then you shall go, too! This station has been more of a curse than the blessing I intended—damn you! Come with me then, you unclean creatures! Hell's waiting for you all!" And with a sudden spring to the switchboard, as the now terrified Lunarians turned to flee, he flung down the magazine switch. Lynthorpe had a confused idea of the floor lifting beneath him as a terrible rending crash filled his ears, and of the Lunarians being flung horribly against the collapsing walls; then he was lifted high into the air —his last sensation in this world. . . .

CHAPTER VIII

WHILE the great mental battle between Professor Lynthorpe and the Great One of Luna was taking place in the control room, the still active auri-vision apparatus was faithfully broadcasting the whole scene to the anxious eyes and ears of the many approaching air fleets, not to mention the thousands of radio listeners throughout the world, who had their sets tuned at that critical moment to the Boothia station's wave length.

At the same time, hundreds of the Lunarians were in the act of descending within the station walls by means of their remarkable mechanical wings, attached to their upper pairs of arms. The whole British staff of the station lay unconscious under the mysterious hypnotic power of the chief Lunarian; the great generators running untended still in the main power house.

The Commander of the Canadian-American forces and his Flight-Lieutenant watched in suspense the scene in the Boothia control room, as reproduced by their television screen, fearing every minute to see the Professor succumb to the Lunarian, and their own fleet be forced down into the inhospitable waters of Hudson Bay, which was still beneath them. The firing of the magazine, the resulting crash and disappearance of the image from the screen as the Boothia set ceased to exist, left the two airmen looking at each other in acute dismay.

At that moment the look-out man entered the cabin, and stood waiting, rather startled by the white faces of his superiors. Recovering himself somewhat, the Commander asked his business.

"The Peninsula is in sight, sir. Also, a few seconds ago there seemed to be an explosion of some kind. We're too high to see clearly what is down there at present."

"Good," said Rickard mechanically. "Reduce speed to about a hundred knots, and altitude to ten thousand feet. I'll come forward in a minute." He turned to the lieutenant as the man left the cabin. "Well, Tilson, a brave man has just died—he did the only thing possible to save us and the civilization of which we think so much. We'll do our damnedest to settle the hill for him when we get within reach of these infernal goblins. See to the armaments, and get the operator to tell the Asiatic and European fleets that we've arrived. I doubt whether we'll wait for them, however. I'm away forward."

In the observation room of his machine, the Commander found that they were all but over the Boothia settlement. Away to the north, what had appeared at first a large cloud resolved itself into the main body of Lunarian machines. These were steadily and silently climbing into the sky two miles away, their dark-grey, slowly-revolving hulls just visible in the thin light of the upper atmosphere. Reaching a height of about three miles, they stopped, and hovered there—a cloud of silent menace.

A frown crossed Commander Rickard's brow as he watched the Lunarian fleet, and he recalled Kena's fighting tactics. "Nothing but a direct hit with one of our 'portables' will bring one of those down," he ruminated. "Bullets are useless, so is gas. A charge by that little lot wouldn't leave us with very much. I wonder—" His reflections were interrupted by the look-out man, who in directing his fog-piercing "searchlight" from the station below into the western sky, had illuminated the foremost machines of a fast-approaching contingent of airplanes. At the same moment the Commander found the radio man at his side with a message from the Asiatic fleet—now in sight—and the information that the Europeans were but an hour's journey away to the south-east. Therefore, things began to happen rapidly on the peninsula of Boothia Felix.

Radio messages flew rapidly between the fleets, the outcome of which was that the European contingent slightly altered its course toward the north, intending, if possible, to take the Lunarians in the rear later. The "portables" of the American and Asiatic fleets, controlled by the parent 'planes in the main body, were despatched high into the sky above the massed Lunarian machines. This manoeuvre prevented the latter from rising above the American 'planes—their favorite position, as earlier illustrated by Kena, for their ramming tactics. Instead, the Lunarians commenced to spread out horizontally, and to eject huge clouds of their brown gas, which also served as a protective smoke screen to their movements.

"Attack!" The signal passed through the ether, and swinging around in a huge orbit with the Lunarians as centre, the Earthian forces buzzed around their objective like the Rings of Saturn. Simultaneously, the "portables"—those deadly little traveling magazines—swooped down upon the Lunarians from above, following every dodge of the grey spheres with uncanny accuracy, and exploding with deafening crashes and terrible results amongst them. The Lunarian vessels charged blindly at high speed into the encircling ring of Earthian 'planes, doing considerable damage in their turn.

After a few minutes manoeuvring, in which terrific damage was done to both sides, a section of the Lunarian craft broke away completely from the maelstrom of gas and machines, and tore off eastwards. With a roar of motors, the American surviving squadrons shot after them, preceded by a few of their speedy radio-controlled

(*Continued on page* 231)

The Lemurian Documents

By J. Lewis Burtt

No. 4: Phæton

HERE comes a thought that even interplanetary travel is not an entirely new or novel inspiration to be credited to modern civilization. Since most myths and legends have some basis in fact, perhaps Phæton and his father did go beyond Daedalus and Icarus in the matter of flying!

Illustrated by MOREY

ABOUT the end of the thirtieth cycle of Mur, in the reign of the noble and wise Emperor Phob-Istu, there dwelt in the far eastern part of the land a young lad, with his widowed mother. This boy, Phæton, was given the education and training of the regular schools of the country. His mother apparently had very little means other than her widow's Royal Maintenance," and so young Phæton had to occupy a great deal of his spare time in assisting with the work of the tiny farm on which they lived. By this means they managed to live in comparative comfort and even to provide themselves with a few simple luxuries.

When he was about twelve years of age, the lad noticed on his right shoulder a tiny black mark in the shape of a crown. On being questioned, his mother explained that this was the tattoo mark put on the shoulder of every child of noble birth.

"Am I then a noble by birth?" questioned the boy, somewhat surprised.

"Yes, my dear," replied his mother, "but never mind about it now. When you are a little older you shall hear the story."

Boy like, as he grew older, he was impelled to boast of his noble descent, showing his little tattoo mark in evidence. His companions, of course, did not believe him, not even after he had endeavored to impress the fact upon them by means of his two sturdy fists.

By the time he was sixteen, however, he became conscious of a change of attitude on the part of many of his former friends. He became aware of sly whisperings and of the prevalence of unpleasant rumors concerning his birth. After brooding over these things for a while, he wisely decided to lay the whole question before his mother.

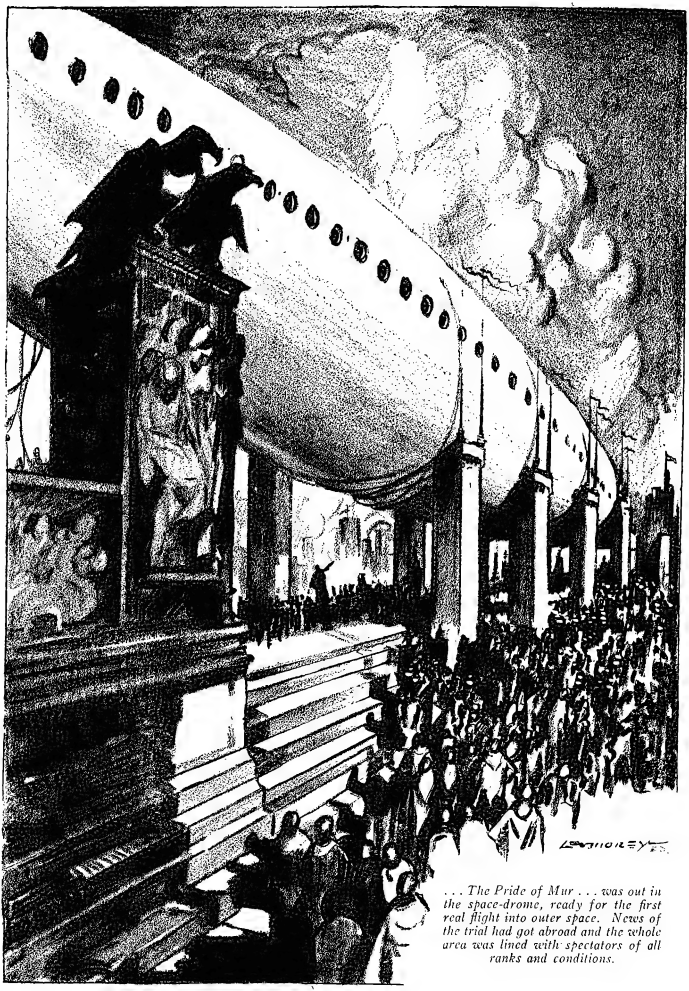
"My son," she began, "since you are old enough to inquire about these matters, you are old enough to learn the truth. Phæton, my boy, it will, I expect, be a very great surprise to you to learn that you are *not* my son. You are the son of the *emperor himself*, born in lawful wedlock. Your mother was a lady of noble, though not royal rank. When your father married her, he did not expect to come to the throne, otherwise the marriage of one, who held royal rank with one who was not royal, would never have been permitted by the Councils.

Your mother died within two days of your birth, and when she passed into the keeping of the Gods, she gave you into the care of her old friend and nurse—myself. To me, a son you have always been, and will always be as my own, even now that you must go to claim your royal heritage."

For a short while the boy stood pondering the startling news. Joy at hearing of his high rank was mingled with grief at finding that the one he had always loved as a mother was in reality, no kin to him at all. Then he went to her and, putting an arm around her, said:

"Mother, you are the only mother I have ever known, and you are the only one I shall ever want. Even though I am not your son by birth, yet I shall always be your son by the ties of love."

"I knew it, my son," exclaimed the old lady joyously, her doubts and fears dispelled.



. . . The Pride of Mur . . . was out in the space-drome, ready for the first real flight into outer space. News of the trial had got abroad and the whole area was lined with spectators of all ranks and conditions.

"But tell me, mother, if my real mother was my father's true wife and of noble birth, why did he disown me?"

"Son, your father has never disowned you," was the reply. "Always has he kept touch with us. Every season he has received a report of your welfare and progress. The money which our neighbors have always supposed to be a 'Widow's Royal Maintenance,' is, in reality, an amount paid by your father for your keep and mine."

"But—" he interrupted.

"Patience, son," she continued, laying her hand on his. "Your father knew well what he was about. He knew only too well the life of a young prince. He knew that rarely does a lad reared among such luxury and flattery become a strong man either mentally or physically.

"Therefore he thought it wise that you should become a child of the people, having enough to keep you from want, but not enough to tempt you to over-indulgence in any way. If you grew to young manhood strong in body, intelligent in mind and noble in character, then you were to be informed of your true rank. If, on the other hand, you did not measure up to this standard, then you were to be informed that you were the son of a lesser noble who had tried to substitute you for the real prince who had died. This explanation would have been necessary in order to explain the royal tattoo, for that mark signifies not merely noble, but royal birth without stain.

"Last season your royal father, being satisfied with the reports as to your character, instructed me to continue as usual until such time as you were matured enough to begin to inquire about your birth. Then I was instructed to send you to him." She rose and crossed the room to a small bureau from which she took a sealed package.

"Tomorrow," she resumed, "you must set out for Rapani, taking with you this package. In it are the proofs of your rank and parentage. These are three in number, the marriage and birth certificates with the royal seals attached to them, the golden chain and seal that were your father's, and the ring that was your mother's.

"Present yourself to your father and give him these proofs still sealed. Your knowledge of the contents of the package is proof of your identity, since it could have been learned from no one else but myself."

"But you, mother," the boy asked anxiously, "Are you not coming, too?"

"No, son, I am happy here, and it is best for you that you go alone—but come and see your old mother sometimes, won't you, son?" she concluded rather wistfully.

THE journey to the capital was an unforgettable experience to the lad. He traveled as an ordinary passenger of moderate rank and wealth. His youthful enthusiasm and natural friendliness, however, soon gained him the freedom of the flier and, boy-like, it was not long before he was going around with the officers and engineers, trying to operate the controls, watching the execution of repairs and adjustments, and generally absorbing bits of mechanical knowledge. Before Rapani was reached, he could almost have handled the flier himself—at least in his own estimation.

Immediately on his arrival at the capital he headed for the palace and demanded an audience of the All Serene. Since he claimed noble rank, the guards admitted him to the Chamber of Secretaries, but here his difficulties began. No, he would not state his business with the emperor. It was personal and of the greatest importance. That was enough for them to know. Who was there to vouch for him? No one. Why should a lad of noble rank require anyone to vouch for him? How did they know he was of noble rank? In disgust, and with the impetuosity of youth, he threw off his tunic and showed the tattoo mark.

At once there came a change. The secretaries, formerly arrogant and hostile, now became apologetic and servile. They had recognized the mark of royalty and, thereupon, they behaved as courtiers throughout all history have always done.

Angry now, the young lad pushed them aside and, no longer waiting for official authorities, strode forward into the Audience Chamber.

Straight to the foot of the gold and ebony throne, on which sat the monarch, he went.

"Well, young sir, what means this unheralded intrusion?" demanded the emperor, when the boy's obeisances were concluded.

"Noble and royal Emperor," replied the lad boldly, "I am your son, Phæton. I come to claim my royal rank and to receive your acknowledgment of my legal sonship."

"So you are my son, are you?" queried the emperor with a half smile. "You have proofs, of course?"

"Yes, sire, I have proofs for your acceptance," replied the boy, holding out his package, the seals still unbroken.

"How did you come by this, and what does it contain?" went on the king without opening the seals.

Clearly and carefully Phæton gave the necessary information. Then the emperor broke the seals and held up to view the proofs of the boy's statements. Then, stepping from the throne, he clasped the boy's two hands in the royal greeting and then embraced him. Turning to the assembled nobles, and placing Phæton at his side, he spoke:

"Hear ye, Princes and Nobles of Mur. Here in solemn council do I acknowledge this young man to be my true and lawful son, Phæton, who has, since his birth, been brought up in ignorance of his rank, as a son of the people. Here are proofs of his birth and of the lawful marriage contracted between myself and his honorable mother, who died in giving him birth. If ye doubt, then look on us, as we stand before your assembly."

Proof or no proof, there could be little doubt of the relationship. The boy standing there beside the emperor was a younger edition of his father in build, in carriage and in feature. Those who had known the emperor in his youth, saw again in his son the young prince of former days. No, there was no doubt.

The emperor continued:

"Ye princes, nobles and peoples of Mur and of all her subject dominions take heed. From henceforth, this lad, Phæton, shall receive the rank and honor due him as Royal Son and Crown Prince of Mur."

The Princes were not greatly surprised at these events, for they had always known of the existence of the hidden heir, but the amazement of the people, and their excitement, when the proclamation was published, was intense.

A feast of a half moon's duration was ordered, and young Phæton came near to having his head completely turned by the honors showered on him. However, his

sound training and natural stability of character came to his aid and steadied him.

By the end of the feast, his father could see that he was wearying of the continual excitement, and above all of the unending flattery. It is probable that this was just what the wise old emperor had intended should happen.

A FEW days later, Phob-Istu sent for his son.

"Well, son," he commenced, "what are you going to do with your life? I think you are already wearying of too much feasting, and, even if not, the Royal Son must choose a suitable occupation. The law demands it. What is your choice in this matter?"

"Royal Father," the prince replied, without an instant of hesitation, "I have one wish and one only. I am told that, before you ascended the throne and thereby resigned your freedom to choose your occupation, you had designed a machine which should travel to other worlds. This machine, I am told, was not perfected, having only progressed so far as to be able to be used in the upper atmosphere."

The king nodded his confirmation of the facts, and the prince continued.

"Therefore, Royal Father, I ask permission to continue the work that you have commenced."

For a space the emperor sat silent. Then slowly he spoke.

"My son, you have asked a hard thing. Gladly would I see you complete my task, but you little know the risks. You are my only child. I look to see you take my throne when I pass, or when I become too aged to rule, should the Gods grant me such length of days. To grant you this desire means that I allow you to place your life in considerable danger, and I fear that it may be sacrificed in these experiments.

"Nevertheless, if after the lapse of one season, you still desire to do this thing, then—so be it. Only you must understand that first you must enter the College of Experimenters for five years. This much time will be needed to give you a sufficient knowledge of those things, without which you cannot continue my work."

So it came about. For five years—happy, busy years—the young prince worked and studied until, at last, his tutors informed his father that they could teach him no more.

The emperor then took him out to his own private residence, near which stood a large white building. To this building they came. From his belt the king took a key, placed it in the lock and threw open the door.

"There, my son, is your work. This is the workshop in which I spent many happy days. May your days in it be as happy and—more fruitful." So saying, he accompanied the prince into the building and showed him all its secrets.

THE laboratory was indeed a marvel of scientific completeness. Samples of all known substance, common or rare, were kept in the stock rooms. Supplies of every kind of apparatus were available, and hundreds of motors and machines of various types were on hand to provide power. Thermostatic control enabled the operators to keep the rooms at any required temperature from below freezing point up to the maximum that men could stand. Ventilation and humidity control of the air were perfectly adjusted. Illumination was obtained by perfectly controlled cold light, whose color and intensity could be varied at will. Electrical tension, which might be produced during experiments, was dissipated by a system of automatic ground controls. In short, it was very nearly the scientist's dream of perfection.

Adjoining the main laboratory, was a huge machine shop, where almost every known mechanical process could be performed. The machines here ranged from tiny, delicate instruments capable of producing parts small enough for the tiniest watch, up to great engines powerful enough to lift and handle many tons of metal.

On a series of solid cradles ranged along the middle of the room, rested an immense cigar-shaped structure with extremely long and finely tapering ends. This was the space-flier designed by Phob-Istu in his youth, and which had never been perfected.

Although the place had been disused for many years, yet there were no signs of neglect or rust. Ever since the time when Phob-Istu had ceased his experiments he had kept a staff of two or three men employed in caring for and cleaning his apparatus and machinery, so that it could be put into use at any time.

For nearly a season the emperor and his son worked side by side, the father explaining and the son learning the secrets which had been kept from all the rest. Then, having passed on to the boy all his own knowledge, Phob-Istu returned to his palace, leaving Phæton to continue the work in his own way.

Gradually the young prince became familiar with the intricacies of the place. Carefully he selected a little band of co-workers, and then, at last, he commenced his life's task.

The difficulties which his father had not succeeded in conquering were two. First the great ship had proved itself almost unmanageable when it reached the upper limits of the atmosphere. In every trial he had made, Phob-Istu had found an inexplicable tendency toward rotation as soon as the atmospheric resistance was reduced.

The second difficulty was that of a sufficiently concentrated fuel. The pulverized solids used had worked satisfactorily in the reaction chambers of the huge rocket tubes, but they were too bulky. The ship could not carry sufficient to take it more than a comparatively short distance, certainly not as far as the moon.

After a period spent in deep thought and calculation, and after a number of consultations with his father, Phæton finally decided to attack the second problem first. He believed, although on this point his father disagreed, that the reaction of a sufficiently powerful fuel would give enough control to overcome the puzzling rotational force. His father, on the other hand, was convinced that the rotation was an effect of some natural force whose nature had not been determined, but whose effect was universally felt in empty space. He argued that from his own experience in the ship and also from the universally observed rotations of the heavenly bodies. In fact, he went so far as to suggest altering the original design and making the ship spherical so that rotation would not matter so much.

Phæton opposed this last suggestion, arguing that a sphere would rotate even more than a cylinder, and when rotating, would be just as difficult to manage. It would, he contended, also be much more liable to damage from meteorites, which would tend to strike the sphere directly and penetrate the shell, whereas with a

long, needle-shaped end on a cylindrical body, they would strike only a glancing blow and be reflected off without damage, in much the same way as a skimming stone ricochets off the surface of water.

The argument that they had designed a type of meteor deflector was not considered worthy of bringing forward by either man. Both felt that these devices could not be relied on until they had been put to the test of actual use.

The final decision arrived at, young Phæton started his staff experimenting with fuels of various types. Wisely he divided the work into four sections, giving to each group of operators an entirely independent line of research, one on solid fuels, one on liquids, a third on compressed gases, and the fourth on various combinations suggested by the other three groups.

He himself now devoted most of his time to the other problem of directional control and for some time acted merely as consultant and adviser to the rest. After a while, however, he came to the conclusion that it was useless to try to work out the problem of the rotation with the data at hand. He must wait until he could take the flier up into the upper air and get some practical observations on the phenomenon.

After a time the results pointed definitely to a liquid fuel as being the only possible solution to the problem. All operators were, therefore, ordered to concentrate on that section, the work being subdivided as before. All the known inflammable and explosive liquids were tried singly and in combination.

Had it not been for the elaborate safety precautions insisted on by Phæton there would undoubtedly have been more than one fatal accident. Even as it was, one operator nearly lost some fingers and another came within a very little of losing his eyes.

Many times they seemed to have achieved success, but each time as the apparently satisfactory result was demonstrated to the prince, he shook his head slowly. "Not enough power," would be his comment, or "Uses too much fuel," or again, "That flame speed is too slow. Not enough reaction."

Always these discouraging remarks would be accompanied by a correspondingly encouraging smile, and before long Phæton had so won the hearts of his men, that they would one and all have sacrificed everything for him.

At last, after more than two seasons' work, one of the younger operators, a lad named Par-Mani, suggested a new line of attack. Instead of taking elaborate combinations of highly explosive substances, let them start all over again with the simpler liquids and try the action of various catalysts on them.

Accordingly, those liquids which had given sufficient power, but whose flame speed was too low, were again made the subject of experiments. Substances, likely and unlikely, were tried as catalysts, but with little or no success.

Then other methods were again suggested, but still the young enthusiast who had suggested the catalytic method, continued to have faith in it.

Seeing his earnestness, Phæton gave him permission to continue along his own line, feeling that some ideas might still come out of it.

Finally, having tried every reasonable combination (and a good many that were very unreasonable also), the young fellow decided that he must have overlooked something somewhere. He seemed to have an unaccountable feeling that he was on the right road, and now, having nothing else left to try, he determined to tabulate and review his whole series of experiments.

This done, he spent days in studying his charts and lists, searching for something he had overlooked—some substance he had not tried. Day after day he searched and pondered—then, one morning, he had a flash of inspiration.

Going to the prince, he showed his records and explained what he had done.

"Now, Highness," he went on earnestly, "there is one possible catalyst that we have neglected. There are two reasons for the omission. One is that it is exceedingly common, and for this reason has been overlooked. The other is that we do not usually think of associating it with explosives. The one obvious substance we have not tried is—plain *water.*"

Phæton's expression as he looked at his young helper was entirely inscrutable.

"So you think water may prove to be the catalyst that will solve our problem?" he questioned.

"I don't know, Highness," was the quiet reply. "I only know that it has not been tried, and we ought to try *every* possibility, don't you think?"

"All right. Try it," was the terse response, and eagerly the lad returned to his work.

He was right. The explosive "kitralas,"* responded to the addition of a tiny water spray injected into the combustion chamber. Its flame speed was increased at least twenty times, while the total power developed was not decreased. In fact, it appeared to give a considerable increase in efficiency.

Here, after all the failures, was the promise of success, but Par-Mani, enthusiast as he was, had the true spirit of the investigator. Valiantly he resisted the temptation to rush off to Phæton with his news. He controlled his eagerness and made a complete series of confirmatory tests, which he had checked by one of the other operators. Then, and then only, he called for the prince to inspect his demonstrations.

After the first test had been carried out, the young man turned anxiously towards his leader, awaiting the verdict. To his surprise, Phæton said nothing—just stood silent and deep in thought.

For some time no one moved. All were waiting for the fateful words.

THEN the prince sprang into action. Test after test he demanded, check after check, calculation after calculation. He had his whole staff working at top speed all the rest of that day, and well on into the night.

It was not a new experience for them. Well they knew that it might be all in vain. Par-Mani alone took heart. He *knew* his results were good, and the prince's action in making these searching tests gave him encouragement.

About midnight Phæton dismissed them all. The tests were complete. Was he satisfied at last? Anxiously Par-Mani awaited the prince's word.

Not yet, however, was he to know the result. Wearily the prince turned to him. "Go and sleep now, lad. Tomorrow at high noon come to me."

"It is—?" he questioned excitedly.

"I don't know yet, boy," was all the answer he got.

---

* We have no idea what the name of this substance would be in our modern nomenclature. There is no clue to its constitution.

It was easy to say "Go and sleep," but how much less easy to do it. For hours the lad tossed on his bed. Hope and discouragement chased each other through his tired brain until eventually, from very exhaustion, he dropped asleep.

When he awoke, the sun was high. Had he overslept? With a bound he was up. No, he was not late. He had just time to reach the laboratory by noon.

Breathless and trembling with excitement, he came to the prince's room. What was to be the fate of his months of work?

As he entered, Phæton rose with extended hand. "Par-Mani, I think you have found it," was his simple statement. "Here, steady lad!"—for Par-Mani had collapsed into his outstretched arm.

PAR-MANI'S experiments had indeed proved successful. The catalyzed fuel—now called "Parmanet" was so powerful that a complete redesign of the discharging mechanisms was made necessary. The tubes had to be made to stand a temperature approaching that of the surface of the sun, and a pressure measured in thousands of atmospheres.

A further period of experimentation was necessitated before a suitable substance could be found. Eventually a material was produced which was sufficiently refractory and heat-insulating to satisfy even Phæton. This material became known as "Ablaston" from its inventor, Ab-Lastu. (It is interesting to note, incidentally, that generations later, the great wizard of science, Pro-Mat-Thu, discovered that by activating it with certain wave frequencies, its resistance to heat conduction could be increased, so that it became an almost perfect insulator.)

By midsummer of the same year, the space ship was ready for her first trials. One afternoon, without saying a word to anyone, Phæton and a crew of four boarded the great vessel. The end doors of the workshop were thrown back and the cradles released.

Carefully Phæton applied power to his land rollers. (The weight had proved too great for ordinary wheels, so long rollers, almost imbedded in the hull, were substituted). Gradually the ponderous mass began to move forward.

When it was clear of the shed, and heading forward to the five mile stretch of the space-drome, Phæton extended the wings, which were to be used during atmospheric flight.

The electrically driven propellers, encased in wind tunnels in the hull, were now put into action and gradually the huge monster gathered speed until the wings had sufficient lift. Then, with an easy movement of the controls, Phæton lifted his masterpiece into the air. The control was as light and easy as that of a one-man air-racer. The ship responded like a living thing.

At a height of about four thousand feet, the prince shut off his propellers and closed the wind tunnels. The ship was now sealed for space flight and ready to venture out into the void, except for the wings, which remained outspread.

Now, with infinite caution, he opened the rocket valves a tiny fraction of their range. With a deafening roar a sheet of lurid flame shot out from the rear tubes. The ship jumped forward like a racing car, and before they fully realized what had happened, they were rushing through the air at a speed of over three hundred miles an hour.

Quickly Phæton closed his valves and folded the wings. For the rest of the afternoon he played with his vessel. Diving, climbing, looping, rolling, he went. Forward and backward he drove the vessel. Twice he let her fall like a stone and then caught her up again with the rockets. Everything that could be done by a trick aviator he did with the huge ship.

Satisfied at length, he brought her down. Lightly as a feather he landed her, and with scarcely any manœuvering, ran her back into her shed.

His mechanics crowded around as he descended from the hull.

"How does she go?" asked the chief mechanic.

"All right, but the rocket control must be made at least ten times as sensitive. I don't care about being hit *quite* so hard by the back of my seat every time I give her a shot of power."

Then he went into technical details of the changes to be made. In addition to the alterations in the power controls, he suggested minor improvements in the angles at which the steering rockets were set, and a slight rearrangement of the control panels.

BEFORE the end of the summer the space ship was ready for her final test. So far Phæton had not taken her outside the atmosphere, as he wanted to be absolutely sure of his control, but now he felt confident that everything was as nearly perfect as it could be made.

Everything having been carefully checked and made ready, he sent to his father and told him that the great trial could be made at any time. The emperor, in response, came down to the laboratory, and with his son, made a minute inspection of every detail of the ship.

"My son," he said when the examinations were finished, "as far as I can see, everything is perfect. I cannot think of one improvement to suggest. Judging by all the known laws of physics, the ship should prove to be a complete success. Yet, in my heart, I am uneasy. I seem to have a premonition of evil. Will you, son, indulge the whim of your old father and allow someone else to make the trial trip?"

In amazement, Phæton stared at his father.

"But, father!" he exclaimed, "how can I? Would you have your son shrink from a risk which he allows another to take? Is that in accordance with the royal traditions of Mur? Is it not better that I die an honorable death—if such be necessary—than that I should live on knowing that I had sent another to do what I dared not?

"Also this thing is no longer secret, and I must uphold the royal honor before the people. Besides, even if these considerations could be brushed aside, there is no other man who knows how to control the ship as I do."

"I suppose you are right, son," replied the older man, "but I fear for you. You will not take any needless risks, will you, my boy?"

"No, father," came the immediate answer, "I shall be careful, and I will keep in touch with you by radivisor as long as possible, so that you will know that all is well."

TWO days later, the *Pride of Mur*, as the ship was named, was out in the space-drome, ready for the first real flight into outer space. News of the trial had got abroad and the whole area was lined with spectators of all ranks and conditions.

There must have been nearly a hundred thousand persons present. Thousands of air craft floated idly in the sky. Those who could afford this means of travel had evidently concluded that it was the best way of seeing the fun.

Observing this, Phæton because somewhat disturbed and finally he went to his radivisor and requested the operator to put him on to the "General Call," to which all instruments respond at all times.

Getting his connection, he spoke into the machine.

"Friends of the air, who have come in your aircraft to see this flight, greeting. I appreciate your interest and your desire to honor us, but you are in danger where you are. The reaction of my rocket tubes will cause great disturbances in the air and may easily wreck you. I do not want any accident to mar this first flight into space, and so I request that you all either bring your machines to earth or else rise to between five and ten thousand feet, and keep at least two miles distant from the *Pride of Mur*."

No further warning was needed. The air patrols, who had anticipated a busy and trying day, found that they had nothing to do except watch the trials like the rest of the people.

The chief mechanic came up to the prince and saluted him.

"All is ready for you, sir," he announced.

A SHORT moment of farewell, and Phæton mounted the ship. The great door was screwed in and the propellers started.

As the ship rose, a burst of cheering broke out all around the space-drome. A hundred thousand voices were raised in honor to the prince. Only the emperor stood silent—fearfully watching.

After a short exhibition of trick flying, Phæton slanted the flier upward and soon disappeared into the blue.

Now, thousands on thousands of watchers were gazing into their radivisors. Messages began to come.

"We are at a height of twenty miles. Controls are perfect," came the first message, and a little later, "We are up to eighty miles and practically out of the atmosphere. Control is still easy, although somewhat more complicated. There is very little tendency to rotation."

Later again: "We are now quite clear of the atmosphere. Control is satisfactory, but less delicate than I expected. There is a noticeable tendency to rotation, but the steering rockets are sufficiently powerful to take care of it with about one-sixth of their power. The mechanism is working very well, although the tubes are hotter than I expected."

Then later again, "The engineer reports that the discharge tubes and valves are getting very hot. I am going to cut off the discharges for a while and drift." Then almost immediately followed the first note of tragedy. "Gods! I cannot! *The valves won't close!*"

FEARFULLY the watchers gazed into their screens. The images were blurred now, but the voice still came clearly, though faintly.

The emperor stood like a man turned to stone.

Then came the last message.

"We have lost control. Our rocket valves have fused and we cannot close them. Our speed is constantly increasing, and we are taking an elongated orbit around the earth. There is no hope for us. Farewell, my father!"

In turn the images of each of the four members of the crew appeared on the screen. In turn each spoke a few words to his loved ones. Then all five images appeared together, standing at the military salute. Phæton spoke one word—"Farewell!"—and the screens went blank!

NO, nothing could be done. Well they knew that the young prince would never have spoken that last "Farewell" had there been the least glimmer of hope.

The emperor, bowed and silent, went slowly to his land-car and allowed himself to be driven back to the palace. As the royal car passed, the waiting thousands stood at the salute in absolute silence.

For a while they left the emperor alone with his grief, then his nephew, now heir to the throne, entered quietly.

"My uncle," he said gently.

Slowly the stricken monarch looked up. "Well, my nephew, what is it?"

"The chief astronomer reports, sire, that they have sighted the *Pride of Mur*, and are observing its movements. It is now established in a definite orbit, and is rotating slowly. He wishes me to inform you, sire, that in a little over a day, if its present progress continues, it will have completed one circuit, and will pass very close to the earth. He asks that the people be warned, as violent atmospheric disturbances may result if it approaches very closely."

"Very well, see to it. The supreme authority is in your hands for the present. Here is the Royal signet. I cannot do anything. I must *think*. Until complete destruction overtakes the ship, I must at least *try* to discover some means of rescuing those brave men."

The prince turned to go, knowing that, despite the king's words, there was *no* hope.

THE next evening, when the runaway was expected to pass close to the earth, was one of intense excitement. Notwithstanding the warning advising everyone to remain indoors, the streets were thronged with people, and all open spaces were filled with crowded cars. Everyone hoped to catch at least a glimpse of the ship.

All radivisor sending stations were closed down except the powerful royal station at Rapani, which was to try to communicate with Phæton if he should be still alive.

At last the observatory signaled that the ship was coming, and that it would pass through the atmosphere within ten miles of the earth's surface. All eyes were strained towards the western horizon, where it was expected to appear.

Finally someone shouted, "Look!"

Away in the immensity of the sky appeared a bluish-white, comet-like streak, which rapidly became brighter. It was the trailing rocket flames of the space-ship flashing out for miles behind her.

At an incredible speed it rushed towards the earth. Then, more slowly, yet still within a few seconds, the shape of the ship appeared, glowing at first dull red, then bright red, and finally yellowish white as it flashed through the atmosphere. For a few moments it was plainly visible, rotating wildly in a period of about six seconds.

As it rushed through the air, there came a mighty, swishing, roaring sound. A hurricane of scorching wind followed—a wind so hot that many believed that the atmosphere was actually burning up.

There must have been nearly a hundred thousand persons present. Thousands of air craft floated idly in the sky. Those who could afford this means of travel had evidently concluded that it was the best way of seeing the fun.

Observing this, Phæton because somewhat disturbed and finally he went to his radivisor and requested the operator to put him on to the "General Call," to which all instruments respond at all times.

Getting his connection, he spoke into the machine.

"Friends of the air, who have come in your aircraft to see this flight, greeting. I appreciate your interest and your desire to honor us, but you are in danger where you are. The reaction of my rocket tubes will cause great disturbances in the air and may easily wreck you. I do not want any accident to mar this first flight into space, and so I request that you all either bring your machines to earth or else rise to between five and ten thousand feet, and keep at least two miles distant from the *Pride of Mur*."

No further warning was needed. The air patrols, who had anticipated a busy and trying day, found that they had nothing to do except watch the trials like the rest of the people.

The chief mechanic came up to the prince and saluted him.

"All is ready for you, sir," he announced.

A SHORT moment of farewell, and Phæton mounted the ship. The great door was screwed in and the propellers started.

As the ship rose, a burst of cheering broke out all around the space-drome. A hundred thousand voices were raised in honor to the prince. Only the emperor stood silent—fearfully watching.

After a short exhibition of trick flying, Phæton slanted the flier upward and soon disappeared into the blue.

Now, thousands on thousands of watchers were gazing into their radivisors. Messages began to come.

"We are at a height of twenty miles. Controls are perfect," came the first message, and a little later, "We are up to eighty miles and practically out of the atmosphere. Control is still easy, although somewhat more complicated. There is very little tendency to rotation."

Later again: "We are now quite clear of the atmosphere. Control is satisfactory, but less delicate than I expected. There is a noticeable tendency to rotation, but the steering rockets are sufficiently powerful to take care of it with about one-sixth of their power. The mechanism is working very well, although the tubes are hotter than I expected."

Then later again, "The engineer reports that the discharge tubes and valves are getting very hot. I am going to cut off the discharges for a while and drift." Then almost immediately followed the first note of tragedy. "Gods! I cannot! *The valves won't close!*"

FEARFULLY the watchers gazed into their screens. The images were blurred now, but the voice still came clearly, though faintly.

The emperor stood like a man turned to stone.

Then came the last message.

"We have lost control. Our rocket valves have fused and we cannot close them. Our speed is constantly increasing, and we are taking an elongated orbit around the earth. There is no hope for us. Farewell, my father!"

In turn the images of each of the four members of the crew appeared on the screen. In turn each spoke a few words to his loved ones. Then all five images appeared together, standing at the military salute. Phæton spoke one word—"Farewell!"—and the screens went blank!

NO, nothing could be done. Well they knew that the young prince would never have spoken that last "Farewell" had there been the least glimmer of hope.

The emperor, bowed and silent, went slowly to his land-car and allowed himself to be driven back to the palace. As the royal car passed, the waiting thousands stood at the salute in absolute silence.

For a while they left the emperor alone with his grief, then his nephew, now heir to the throne, entered quietly.

"My uncle," he said gently.

Slowly the stricken monarch looked up. "Well, my nephew, what is it?"

"The chief astronomer reports, sire, that they have sighted the *Pride of Mur*, and are observing its movements. It is now established in a definite orbit, and is rotating slowly. He wishes me to inform you, sire, that in a little over a day, if its present progress continues, it will have completed one circuit, and will pass very close to the earth. He asks that the people be warned, as violent atmospheric disturbances may result if it approaches very closely."

"Very well, see to it. The supreme authority is in your hands for the present. Here is the Royal signet. I cannot do anything. I must *think*. Until complete destruction overtakes the ship, I must at least *try* to discover some means of rescuing those brave men."

The prince turned to go, knowing that, despite the king's words, there was *no* hope.

THE next evening, when the runaway was expected to pass close to the earth, was one of intense excitement. Notwithstanding the warning advising everyone to remain indoors, the streets were thronged with people, and all open spaces were filled with crowded cars. Everyone hoped to catch at least a glimpse of the ship.

All radivisor sending stations were closed down except the powerful royal station at Rapani, which was to try to communicate with Phæton if he should be still alive.

At last the observatory signaled that the ship was coming, and that it would pass through the atmosphere within ten miles of the earth's surface. All eyes were strained towards the western horizon, where it was expected to appear.

Finally someone shouted, "Look!"

Away in the immensity of the sky appeared a bluish-white, comet-like streak, which rapidly became brighter. It was the trailing rocket flames of the space-ship flashing out for miles behind her.

At an incredible speed it rushed towards the earth. Then, more slowly, yet still within a few seconds, the shape of the ship appeared, glowing at first dull red, then bright red, and finally yellowish white as it flashed through the atmosphere. For a few moments it was plainly visible, rotating wildly in a period of about six seconds.

As it rushed through the air, there came a mighty, swishing, roaring sound. A hurricane of scorching wind followed—a wind so hot that many believed that the atmosphere was actually burning up.

The wanderer flashed on—out again into the void.

There was now no shadow of doubt that those on board had perished. Even if they had been alive when they approached the earth, the terrific heat produced by the atmospheric friction must have burned them to cinders.

PHOB-ISTU, realizing at last that his son was indeed lost to him, came out from his seclusion and resumed the reins of power. His royal traditions did not allow him to neglect his people longer.

Next morning he received an urgent request from the Chief Astronomer for an audience. Matters had become rather serious. According to calculations, the orbit of the space-ship was not constant. At intervals of a little more than a day it would reappear, approach the earth, and disappear again into space. *But*, at each revolution, it would *come a little closer*.

For some time the emperor did not realize the significance of this last statement, but when he did grasp it, he was almost in despair. Each time the ship passed through the atmosphere, it would become more dangerous. The trouble was that no one could say with any certainty just what would happen, and so there was danger from panic to be added to the rest of the problem.

What would be the end of it? Was there anything at all to be done? Absurd question! How *could* anything be done with such a projectile?"

The first six or seven days passed without very serious damage. The scorching winds and violent storms followed every passage, but otherwise the results were not greatly alarming. It was soon obvious, however, that each time the ship came a little nearer, and, through being longer in the atmosphere, a little hotter.

People began to be disturbed and, although there was no actual panic yet, a sense of fear and uneasiness began to make itself felt.

A deputation of citizens approached the emperor asking whether something could not be done to avert the threatening calamity. They were received kindly, but the emperor had to confess himself quite helpless. To satisfy them, and to avert the threatened panic, he assured them that he was giving his whole thought to finding a possible way to prevent the catastrophe that all felt to be imminent.

During the next ten days things became more serious. The projectile now approached within two miles of the earth, and each time it heated to a white-hot glow. The flames from the rockets, which strangely enough were still firing, reached near to the ground at each revolution of the body, and caused terrible fires.

The damage done was appalling. Whole sections of the country were ablaze. In some places the smaller streams were dried up. One or two cities had been caught by the rocket blasts and were burned up completely.

The loss of life was fortunately small, for as soon as the astronomers were able to calculate the orbit exactly, they issued warnings to all those living in the danger zones. The military forces rendered invaluable aid in removing the people from the dangerous areas, but, work as they would, they could save very little property.

The astronomers now had still worse news to impart. The rockets had ceased to flame and, consequently, the orbit had become less variable, and it appeared as though the great ship would continue to race around the earth for years. The only hope appeared to be that it would eventually be entirely burned up by the many successive passages through the air.

DESTRUCTION stared the world in the face. Long before even a single year had passed, the land would be laid waste from end to end. Thousands of square miles were already scorched into great deserts. Millions of acres of timber, and millions on millions of tons of crops had been totally destroyed. To their other troubles was now added the threat of famine.

Riots and disorders broke out, and finally the country was placed under military control. Thousands were killed in the disturbances before they were quelled, and only the sternest measures prevented a revolution, or even a lapse into the complete anarchy of terror.

Then, when it seemed that humanity could endure no longer, the emperor sent out a word of hope.

"Ye peoples of Mur, be brave, be courageous yet a little longer. We, Phob-Istu, your emperor, believe that there is yet hope for the world. A plan has been put forward for the destruction of the space-ship. It will be tried as soon as the necessary equipment can be prepared." So read the proclamation.

Briefly the plan was this: The rocket fuel could not be exploded by heat alone—otherwise the ship would long since have destroyed itself—it required an electrical spark or ray to start the explosion. The reaction would continue, however, once it was started. This accounted for the remarkable fact that the rockets had continued to operate for so many days before they finally ceased to burn.

Phob-Istu, knowing all the design of the ship, had reason to think that all the fuel was not used up, that the supplies of fuel for the forward, or braking rockets, and for the emergency steering tubes, were still unburned.

If this were so, they could be exploded by a sufficiently powerful Hertzian wave* focussed on to the ship. Accordingly one of the great radivisor stations, which was near to, but not quite on, the path of the projectile, was prepared for the attempt.

The most accurate calculations possible were made to determine the exact path of the ship on a day sufficiently far ahead to allow the preparations to be completed.

Three young nobles volunteered to operate the ray, knowing that, in spite of elaborate precautions, they would probably be scorched to death in doing so.

Everything was in readiness a day or so beforehand, so the volunteers were able to get a little practice in the handling of their apparatus.

By now half the empire was reduced to desert, and in other lands, too, the appalling conditions were duplicated. Only the emperor's reassuring messages kept the world from complete insanity. It is a great tribute to humanity that, on the whole, the masses of the people retained their self-control under these terrible circumstances.

SHORTLY before the time of the big attempt, the three volunteers drove out to the tower. Their plans had been carefully worked out and each knew exactly what he had to do.

At length they received the message from the landphones that the astronomers had sighted the space-ship and that it was coming exactly as calculated.

* Something of the same nature as a Hertzian wave appears to be indicated here. We have translated the Lemurian word in this way as being the nearest we could get to it.

Outwardly calm, but inwardly strung up to the breaking point, they took their stations.

The fate of a world depended on them. If they missed their aim tonight, at least twenty days must pass before the ship again approached the earth at a suitable time and place, and even then conditions would be less favorable for their attempt.

After some endless seconds, the cigar-shaped hull was sighted. Instantly they flashed on the ray. The electrical tension ionized the air in the path of the beam, so they were able to aim directly. Even so, their task was one of extreme difficulty. The ray was effective only within about five miles. This meant that they had about seven seconds in which to make their attempt, and during these few seconds the hurtling mass would be flashing past them at such speed as to make any aiming almost impossible. Their only chance was to get the ray lined up on the ship as soon as possible, and to try to follow it as it came into effective range.

Two of the operators were to control direction—one vertical, the other horizontal—while the third man attended to the power controls and the focussing.

Their co-operation was perfect. Straight out to meet the onrushing destroyer shot a pencil of pale blue light. With almost incredible skill they forced it to follow the movement of the ship.

Would it be powerful enough? Was there, after all, any explosive left in the tanks? Would they be able to hold the ray steady?

Question after question flashed through their minds. It was only a few seconds since they had first sighted the ship, but to them it seemed eternity itself. For them, time stood still.

Suddenly a dazzling flash of light illuminated the whole land. Even through their double masks they were blinded. Their work was finished! The world was saved!

But what of the three volunteers themselves? Scarcely had they begun to realize their success when, with a roar like the crash of doom itself, the explosion hit them. The tower rocked to its foundations. The men were flung against the wall as though by a tidal wave, and they knew no more.

When they regained consciousness, they were lying in bed in the royal apartments, with attendants bending over them. As the youngest of them opened his eyes, he stared around for a moment, then, with a boyish grin, he asked, "What hit me? Some wallop!" and he drifted back to sleep.

When, some thirty days later, they were released from their beds, they found themselves the idols of the nation. Presents and subscriptions had made them rich for life, and honors enough to satisfy even the most ardent "pot-hunter" were showered on them. As the youngest remarked, "If the big bang couldn't kill us, maybe we'll survive the flag-wagging."

The work of reconstruction was commenced at once. Wherever possible the burned lands were put back under cultivation at once. In other districts gigantic irrigation and refertilization projects were started. The ruined cities were rebuilt and the homeless provided with new habitations.

By the end of ten years, the greater part of the empire was again prosperous and productive, although there are even today strips of desert hundreds of miles long, which can never again be made fertile.

The cost of all this was far more than the national treasury could provide, so the emperor, the princes and nobles, and the rich merchants, without a single exception, placed their entire fortunes at the disposal of the Councils. Even the priests added the greater part of the temple funds to the total.

The attempt at space flight had failed, and at what a cost! Yet many feel that the sacrifice was not entirely in vain, and that, when the memory of the tragedy has faded, the work will again be resumed. In the days to come our children will solve the problem. Perhaps even some of us will live to see the ships of Mur making regular voyages to the other worlds of our solar system. Who knows? Who can foretell the future?

THE END

What Do You Know?

READERS of AMAZING STORIES have frequently commented upon the fact that there is more actual knowledge to be gained through reading its pages than from many a text-book. Moreover, most of the stories are written in a popular vein, making it possible for anyone to grasp important facts.

The questions which we give below are all answered on the pages as listed at the end of the questions. Please see if you can answer the questions without looking for the answer, and see how well you check up on your general knowledge of science.

1. What is to be said of the smoothness of the surface of the earth? (See page 199.)
2. If a man walked a mile on the surface of the earth where it was absolutely smooth, would he walk in a straight line? (See page 199.)
3. Can we picture the world as Flatland? (See page 199.)
4. Where would you look for the terrestrial magnetic pole? (See page 202.)
5. Do the magnetic poles vary in position or are they fixed? (See page 202.)
6. What would you expect to locate in the peninsula of Boothia? (See page 202.)
7. What reason is there for apprehending that a space ship outside the earth's atmosphere would rotate uncontrollably? (See page 225.)
8. What theory can be given for the effect of temperature on the skin? (See page 239.)
9. What curious results might be looked for in nerve-reversing? (See page 244.)
10. How might nerve reverse also effect mental emotions? (See page 245.)
11. What is the first discharge of long range guns at sea for? (See page 270.)
12. How does this give the range? (See page 270.)
13. What formations are characteristic of the floor of a lime stone cavern? (See page 271.)
14. What is a ranging salvo? (See page 277.)
15. Is there any kind of dust in outer space? (See page 285.)
16. How could a very low temperature affect a conductor of electricity, when carrying a current? (See page 286.)

Masters of the Earth

By John Edwards

(*Continued from page* 221)

magazines. The pursuers instantly got into touch with the European fleet—already visible as a dim smudge in the higher atmosphere—and the latter immediately pushed forward their attendant vanguard of "portables."

Caught thus between two contingents of moving death the Lunarians did the only thing possible, and shot upwards at a terrific angle, soon outdistancing their pursuers, who after vainly following them to the limits of the earthly machines—about thirty miles up—gave up the chase. The dozen or so of surviving machines rapidly disappeared into space, evidently making for their native planet once more.

The now combined American and European fleets returned speedily to Boothia, where the Lunarians, evidently at sea without a leader, had very soon succumbed to the overpowering numbers of Earthians arrayed against them. Every single vessel of the Moonmen had been completely destroyed, except the few which had escaped to return to Luna; and after an interchange of radio messages, the airplanes containing the leaders of the various forces had landed on the plateau outside the station, while the main body had in each case started out on its return journey to its home continent.

The explosion which carried away the control house with its secret of the magnetic field, and sacrificed the Professor and his two unconscious assistants, also suddenly removed the Great One of Luna and his influence upon the rest of the station staff. The latter, the hypnotic influence removed for ever, recovered their senses to find several scores of winged Lunarians, now without a leader, stranded without their air machines, which had suddenly taken to the air upon the appearance of the Earthian fleets. The station staff, who fortunately still had their rifles in the power house and their living quarters, had little compunction about "picking off" the few score Lunarians from the shelter of these buildings, and very soon not a single one of the invaders remained alive within the station walls.

Thereafter, the staff, now under the control of the manager Robson, kept low inside their respective buildings while the serial battle raged far above the plateau, and every few minutes the wreck of either a Lunarian machine or an Earthian plane hurtled to earth—sometimes within the station's very walls. The whole electrical gear of the station had, of course, been rendered useless by the destruction of the control house, and the bewildered Robson and his staff crouched in the semi-darkness of the Arctic Spring day, listening to the terrific uproar far above, and wondering if the end of all things had arrived.

At long last, observing that the airplanes were de parting, their work done, and that a certain number of them had landed outside the station walls, Robson took a number of men to the main gate to admit the visitors. The meeting of the rescued and their rescuers may be better imagined than described.

AN important international meeting was drawing to a close in Geneva with the final address of Sir James Oliver, as the representative of the British Electrical Combine at this gathering of world-wide importance.

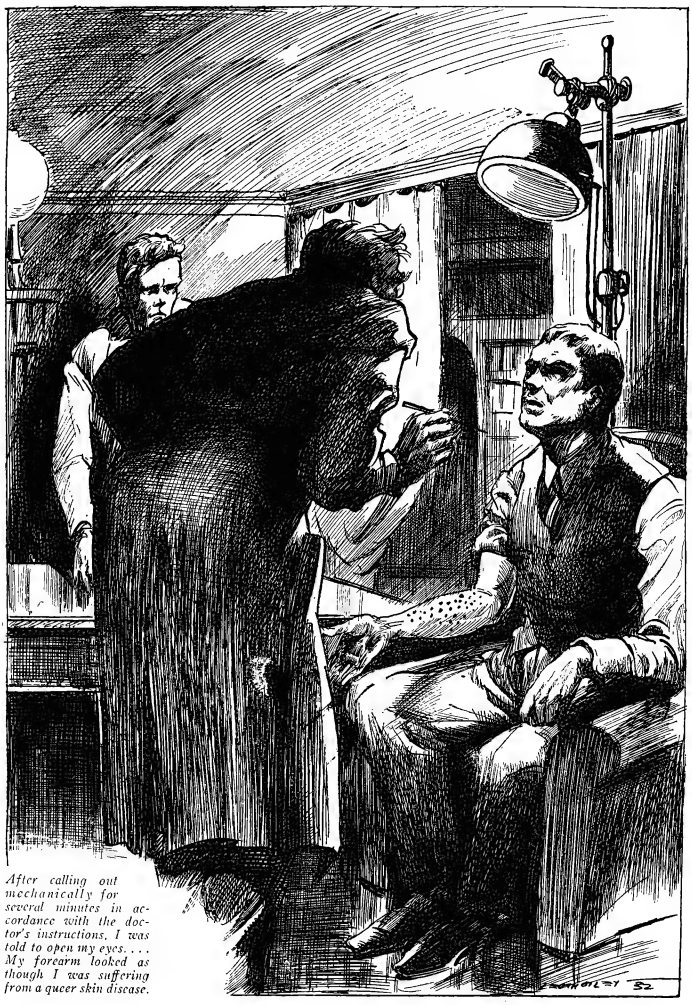
"Gentlemen," said the baronet, "I have given you the whole story of the scheme which lay behind the building of the Boothia power centre. There are present in this hall today the delegates of those war-loving nations, which caused Professor Lynthorpe to consider such a scheme necessary for the abolition of war—even though it had certain drawbacks. As you have heard already, those two nations have realized the futility of war between the countries of this Earth of ours—particularly in view of the recent happenings. If we are liable to interference from the inhabitants of other planets—and that danger will always exist in the future—we cannot have complete abolition of armaments on this planet. We can, however, limit their output, allotting to each country, irrespective of size, a standard defence force to be held in readiness for combination with the air forces of other nations of the same continent in the event of another attack from outer Space.

"We must combine to protect this fair earth of ours against invaders from another sphere, and not be taken off our guard by being caught squabbling amongst ourselves. Otherwise we may one day find that we have become the slaves of creatures of some other world, and the recent sacrifice of Paul Lynthorpe and his two assistants will have been in vain. That great man did not hesitate to act quickly and unfalteringly in a dreadful moment of crisis for this world.

"The secret of the Boothia station died with its creator —perhaps that is as well, for some reasons. It is not intended in this world of ours that one man should have so much power over the movements of his fellows. The intervention of the Lunarians showed the dangers of such unlimited control of forces with which we are as yet but slightly acquainted.

"Gentlemen, may we hope that the recent experiences have taught us a lasting, if severe, lesson in our international affairs, and that this International League of ours will always honor the names of Paul Lynthorpe, his son Alan, and Norman Matthews!"

THE END



After calling out mechanically for several minutes in accordance with the doctor's instructions, I was told to open my eyes. . . . My forearm looked as though I was suffering from a queer skin disease.

A Matter of Nerves

By William Lemkin, Ph.D.

Author of "Cold Light," "The Eclipse Special," etc.

THE human body, it is known, is a very delicate machine with a highly concentrated nerve center. If some meddlesome nerve specialist-scientist somehow conceived the notion of tampering with the sensory nerves, for instance, what havoc could he play with a human body—and still keep the body and mind alive and functioning? Dr. Lemkin gives us here some such possible situations —ludicrously funny, strangely weird, and then sadly pathetic.

Illustrations by MOREY

THE figure of the man on the bench attracted my attention. There was something incongruous about it—something that halted me in my leisurely stroll down the park lane. I turned about and scrutinized the man seated there. Perhaps it was not the most polite thing to have done, but in a vast city like New York, such trifling breaches of propriety occur by the hundred every day, and nobody ever pays any attention to them. Gaping at strange sights, strange people, and strange occurrences are commonplace pastimes in the big city.

For several moments I stared back at the huddled figure, and then I retraced my steps and came closer. This was no ordinary park hobo. He was too well dressed for that. But to be bundled up the way he was—that struck me as being decidedly odd. Central Park was alive with people this rather warm evening in early June. All were seeking to take advantage of whatever breeze was astir following an unseasonably hot day. But this individual in an overcoat and heavy muffler—he looked unmistakably out of place here.

It is not my usual custom to stop and interrogate every queer person whom I encounter. But I was strangely drawn to this one. I seated myself next to the huddled figure. As the bench responded to my weight with a squeak and a slight teetering, the man looked up from the depths of his upturned coat collar, where his head had lain buried. His hands remained sunken far down in his pockets. A pair of questioning eyes searched mine in the pale glow of a distant park light.

"Good evening, stranger," I ventured pleasantly. "It's a bit warm, isn't it?"

He smiled queerly, but made no reply.

"I hope you don't think I'm butting in," I continued. "I just happened to be passing by and you appeared to look so—so—*different!*—different from all the other people out here in the park to-night—all trying to cool off—and you rolled up here in an overcoat as though it were midwinter instead of the month of June."

His odd smile broadened into a grin. I could make out a frank young, intelligent face—or as much of it as was visible between a hat brim and a turned up coat collar.

"Think I'm queer, don't you?" he queried. "Cracked —a screw loose or something, eh?" I could have sworn, as he spoke these words, that his teeth chattered as if he were suffering from a strange chill. A closer view of his face revealed a certain blueness about the corners of his lips.

"Nothing of that at all," he went on, with another suspicious rattle of his teeth. "I'm neither drunk nor crazy Mr.—Mr.——."

"Nelson—James P. Nelson." I extended one of my cards to him. His fingers touched mine as he reached for it, and I felt them cold and trembling.

"Thank you for your kind interest, Mr. Nelson. My name is Carl Vernon, home town—Clinton, Iowa."

"If you are ill, Mr. Vernon, maybe I'd better see about a doctor for you."

Again that queer smile flickered across his youthful features. "Thanks a lot, sir, I'm all right—nothing wrong with me—nothing, except that I am the subject of —er—of an experiment."

"An *experiment!*—What kind of an experiment?"

The strange young man parried my startled query with one of his own. "Have you ever heard of Dr. Seagrave?"

"Dr. Paul Seagrave of the Neurological Institute? Why yes—rather vaguely. I've never met him."

"Well, I'm his whatever you want to call it—his guinea pig—his test tube—his experimental material. He's working out some sort of experiment on me—something deep and mysterious—at least it appears that way to me."

THEN there followed a recital as unusual and bizarre as has ever been delivered anywhere. Vernon went back and related things from the very start. He told of how he had "bummed it" for five years from 'Frisco to Boston and return, down through the south, from industrial centre to agricultural centre and back again.

"Freezing in winter, sweltering in summer," he said, "going hungry and ragged, sleeping in cheap flop houses or in hay stacks—I tell you Mr. Nelson, life was no cinch for me during those five years. A week ago last Thursday I hit New York for another try at what the Big City had to offer me. The next morning I received the offer in the shape of this——"

He fumbled in an inside pocket and drew forth a tattered clipping. It was the Public Notices column of the *New York Times*. One item was crudely circled with a pencil mark. It read as follows:

ARE YOU A YOUNG MAN between the ages of 20 and 25, vigorous and healthy, with a desire to help in promoting the welfare of humanity? Are you willing to accept a substantial money reward to aid in a scientific experiment of profound importance? There is no physical danger involved. E 574 Times.

"I was one of about a dozen," continued the young man, "who were called for an interview—a dozen of the healthiest specimens you ever laid your eyes on—even though I say so myself." A dash of pride stole into his voice. "I was lucky enough to be picked. So here I am, helping to promote scientific achievement and human welfare."

"But the experiment?—what did Dr. Seagrave do to you?"

"Oh yes—the experiment—why, I really am not on to it entirely myself. Dr. Seagrave is a queer duck—maybe you've heard about his ways. Lives in an ancient dwelling near the Medical Centre—lives there alone with his daughter who keeps house for him."

"Yes, I've been informed about his odd ways. He's a brilliant nerve specialist and an expert surgeon but they say he has an unusual twist somewhere in his mental makeup. However—about that strange experiment of his——?"

"Well, Dr. Seagrave first had me sign a lot of papers. To tell you the truth, I didn't mind signing anything, because I was down and out and desperate—even if it was my own death warrant—maybe it *was* my death warrant, and I don't know it. Anyhow, I was fed, and fitted out with clothes, and given a roll of money, and made comfortable, which I hadn't been in five years."

"And then what did he do?"

"Dr. Seagrave's experiment took place on the following day. He first assured me that there would be no pain or discomfort whatever. And to tell you the truth, Mr. Nelson, it didn't hurt a bit. The whole thing took only about ten minutes. He didn't put me to sleep completely—I was just in a kind of daze or stupor while he fussed around in the neighborhood of the back of my neck and down a ways along my spine. I felt a kind of poking or jabbing, but no pain."

"And was that all to Dr. Seagrave's queer experiment?"

"Why, there wasn't anything more to it than that simple little operation—if you want to call it an operation. The old doctor seemed to be very much satisfied with the results of his stunt. Three times a day for a half hour each time I report to him for observation. The rest of the time is my own. He has me fixed up in a nice little room on the top floor of his old house. I come and go as I please—so long as I'm on hand at each testing period, according to the schedule he has laid out for me."

"What sort of observations does he make on you during those testing periods?"

"All kinds. He measures me with a dozen different gadgets—thermometers and such—and marks it all down in a book. He questions me about how I feel, and what my sensations are at this or that time. He has me hold various knobs and thingumbobs on his machines—some of them are hot, some are cold, some give you a funny tickling sensation in the fingers and toes and the tips of your ears—and all the time he's entering a lot of stuff into his book. Guess he's pretty well pleased with his experiment, because he keeps smiling and nodding approvingly as he makes his measurements and writes down his figures and notes, as though everything is panning out just the way he figured it would."

"You say, Vernon, that there is no discomfort at all as a result of this—this operation of Dr. Seagrave's?"

"Well—right after the thing was over, and for three or four days following, I felt no bad effects at all. As a matter of fact, I shouldn't really complain that I am having any serious effects right now. It's only a kind of uncomfortable feeling—a feeling that I'm sort of—sort of *twisted around—short-circuited* inside—everything seems to work just backwards——"

Throughout the recital, the boy—he was no more than that—had maintained his original, huddled position with his hands stuck in his overcoat pockets. At this point he brought out his right hand and placed it on the back of mine. Its cold clamminess sent a chill through my body. His fingers trembled as with the ague. He hastily withdrew them and replaced his hand in the comfortable protection of his pocket. His bluish lips trembled in a weak smile.

"I was feeling pretty well until this unusually warm spell came on during the middle of the week. Then I seemed to go all to pieces—just the way you see me now. That's why I say I'm all reversed."

He surveyed me in my cool summer attire, vestless, coat open to the gentle evening breeze. He gazed across the park lane at a group of lightly clad children scampering about in their play. Then he glanced down at his own bundled up figure and laughed a hollow little laugh.

"I guess I look queer—and I feel it too—chilly and wintry, when I should be warm and comfortable."

I WAS strangely impressed by the unusual tale of this unusual person. Whatever the nature of old Dr. Seagrave's experiment, the results were certainly queer to behold. I questioned the youth further. He was not at all reticent in his replies. I had him go back and recount in detail the nature of the surgeon's manipula-

tion during the time of the so-called operation. Not that I was at all versed in medical or surgical matters. I was trying to figure the thing out purely from the layman's point of view. I also questioned Vernon on his own physical manifestations during the short period since the beginning of the experiment. To tell the truth he had not paid much attention to them until the beginning of this discomfort several days ago. He was no scientist, so he had no ability in analyzing or coördinating these manifestations. He had left all that to Dr. Seagrave. And I, being no more of a scientist myself than Vernon was, could scarcely interpret them any better than the young man. However, when he was through with his narrative, it did not require an expert scientist to see through the strange experiment that the old nerve surgeon had performed and was performing on this very docile and unsuspecting subject. The young man and I came to that conclusion without the assistance of profound scientific knowledge.

As Vernon himself had so aptly termed it, he was "all short-circuited inside." Something that Dr. Seagrave had manipulated in his body had effected a *complete reversal of the temperature sense.* There was no doubt about it—even to one who had no particular knowledge about the anatomical considerations involved. Vernon's nervous system had been so tampered that he felt hot for cold, and *vice versa.* What a topsy-turvy condition of things! A sensation of cold and chill on a balmy spring evening such as this—a feeling of heat and discomfort when the temperature was low!

The situation was indeed unusual—even ludicrous. After I had invited the young man to come with me up to my quarters—I was really becoming intensely interested in this strange specimen, and wanted to get as much of his story as I could—we left the park and strolled up Broadway. Before turning into my street in the upper Seventies, I asked him into a sweetshop for a soft drink at the fountain. He ordered a plate of ice-cream, apparently forgetful for the moment of his "twisted nerves" condition. I asked for the same. In sheer abandon, he scooped up a generous spoonful of the frozen delicacy. He got it safely into his mouth, but the moment he began swallowing, the fun began. I say it was fun, but it must have been genuine physical anguish to the poor fellow. He turned as red as a beet, his eyes bulged dangerously, and he began to make queer gurgling noises in his throat. The offending mouthful was hastily disposed of, but Vernon remained sitting there panting, his hand clutching his throat, his eyes streaming tears of pain.

"Whew!" he managed to gasp. "Like trying—to swallow—a—a—red-hot door-knob!" He mopped his brow and massaged his sorely chastised throat. Unwittingly, I offered him a glass of water—ice water!—that had been brought with the ice cream, but he mutely declined, and I realized why in an instant.

"You see how it is, Mr. Nelson," he said as we continued our way to my quarters. "Just that one peculiar twist, otherwise I feel fine. So far, in the few days during which I have been noticing it coming on me, I haven't really suffered severely—it's just a case of being moderately annoyed. This episode of the ice cream is about the worst so far."

Up in my rooms Vernon told me more about himself. Orphaned at an early age, he had led an existence of struggle and privation almost all his life. He spoke fondly—almost longingly—of his home town, his boyhood surroundings and acquaintances, his youthful ambitions, such as they were.

"Could I have seen myself then as I am now," he laughed, "an experiment in nerves!"

We fell to discussing Dr. Seagrave's motives. Vernon admitted to me that he himself was entirely in the dark.

"He's told me nothing whatever about the why and wherefore of it all," said my new friend. "And I wasn't inclined to question him too deeply."

"Didn't you feel," I asked, "that you might be endangering your health—maybe your life—by going into a thing of this kind? At least you have sought advice about it beforehand."

"I suppose I could have," admitted Vernon, ruefully, "but I just didn't—the offer was so attractive—and unexpected—and I was actually down and out. I don't know if anyone else in my place would have hesitated any more than I did."

"Now, about the old fellow's scheme back of it all," I mused. "For the very life of me, I can't figure out what he's trying to accomplish by this unique nerve reversal that he's brought about in you."

"Well, he said something in his original newspaper item about a scientific experiment of profound importance, and helping to 'promote the welfare of humanity'."

"I'll be hanged if I can see how it could help humanity the slightest bit for a person to feel hot when he should feel cold, and the other way around. Can you, Vernon?"

"I can't say that I can. But the old doctor seems to know what he is doing. He kept talking about the wonderful results of his experiment all through the time he was working over me. He says a lot about it too, while he's measuring and testing me during those inspection periods every day. But I'm not smart enough to get the idea of what he's talking about. However, there must be something in it, judging by the satisfaction that he gets from making his tests on me and putting it all down in his record book. Anyhow, I'm not kicking, so far. I'm well fed, I have a roof over my bed, good clothes on my back, money in my pocket, lots of time to myself, and I'm pretty comfortable all around."

"Comfortable, did you say? An overcoat in June—ice cream that feels like scalding soup down your throat! Comfortable?"

"Well—*comparatively* comfortable. At least, if I'm just a little careful—if I think twice before going to a certain place, or doing a certain thing, I could manage to get along just about average. Don't you think so, Mr. Nelson?"

I agreed with him on that point. I could see that the boy was in no really great danger as things stood at the present moment, whatever the object of the queer experiment might be.

When Vernon took his departure in the small hours of the morning we were as chummy as if we had known each other for years. He promised to get in touch with me very frequently. I was anxious to see him often, for I too had become absorbed in this extraordinary experiment. But more than anything else, I was deeply concerned with his own personal welfare.

During the course of the next few weeks I saw Vernon several times. He appeared to be having a good time, in spite of his strange twist. Now that the unseasonable heat wave was over, and the normal balmi-

ness of early June was with us again, Vernon suffered no annoyances as a result of his condition of reversed nerves.

"Old Seagrave seems to be tickled to death about the way things are going with me," he gleefully confided to me one day. "Says he's expecting to expand the project very soon—talks about going more deeply into the study of short-circuiting the nervous system. Promises me continuous work (if you want to call it work!) for the next six months, or maybe a year."

I MARVELED at the singular enthusiasm of this youth, who was willing to lead such a trying existence—at least it appeared trying to me. Perhaps there was more in it for him than the mere money payment, or the satisfying of his physical wants of food, clothing and shelter. Surely, I thought, these material considerations could not be sufficiently attractive in themselves to counterbalance the annoyance, nay the dangers, of his present situation. Maybe Vernon was deriving greater rewards from the situation than he was at present willing to admit. About these I was destined to learn more later.

"What would you say," I inquired of Vernon during one of our frequent strolls through the Park, "if I asked you to take me up on a visit to Dr. Seagrave some afternoon?"

"Well, I don't know," was the serious reply. "You see, he's very secretive about the whole matter—won't let a soul into it."

"Don't you think that, if you presented me to him as a friend of yours, he might let me ask him a few questions about the work?"

"I have my doubts, Mr. Nelson, if he'd be willing to talk freely at this stage of his experiment. Even his colleagues at the hospital do not know what it's all about. Maybe they have a hazy idea, but he has never had them around to show them anything definite, as far as I know. In fact his own daughter doesn't know any more about it than what I have told you myself—and she's with him constantly."

Nevertheless, I pressed the matter—insisted that there could be no harm to my paying the old wizard a call on general principles. Still skeptical, Vernon agreed on a day and an hour for my visit to the doctor with him.

DR. SEAGRAVE lived in a rather antiquated, brownstone house on a secluded street in upper Manhattan. Only a few blocks away rose the majestic pile of masonry that went under the name of the "Medical Centre." The Neurological Institute was one of the outstanding structures in this group. I knew that this was the hospital with which Dr. Seagrave was connected.

Ascending the steps of the doctor's dwelling, Vernon bothered with no formalities. He let himself in with a pass-key and I followed him through the dimly lighted hall into a drawing room. A figure presented itself in the doorway leading to another chamber. Dr. Seagrave's daughter, I presumed to myself.

The girl was young—I judged about twenty—and unusually attractive. She stood there on the threshold for a short moment, eyeing us curiously.

"Why Doris—er—Miss Seagrave, this is Mr. Nelson, the gentleman I was telling you about . . . Mr. Nelson, meet Miss Seagrave, the doctor's daughter." Vernon exhibited some confusion and I wondered—well—who wouldn't become confused in the presence of those sparkling eyes of brown.

The young lady acknowledged the introduction becomingly. "My father is expecting you, isn't he?" she asked.

"Well," laughed Vernon, "I told the doctor I was bringing a friend this evening—I don't know if he was paying much attention to what I was saying at the moment—you see he was so occupied in that blood pressure measurement. Oh, well, I don't think he will mind; Mr. Nelson is a pretty close friend of mine, and I thought the doctor would explain some of his stunts to him."

I broke in to assure Miss Seagrave that I wasn't a mere meddler, that I was deeply interested in the work of her father, that I wanted to make his acquaintance and learn about the nature of the experiment on my friend—if that was at all possible.

"I'm afraid, Mr. Nelson," returned the girl, "that you will not find father so free with information. That's just his way—he doesn't take anyone into his confidence—not even me. He works and works, all by himself, and then, when the particular task is completely finished, that's the time he comes out with the facts. Some people would call him—well—peculiar—but that's the way I've always known him."

We were presently ushered into Dr. Seagrave's combined laboratory and study, a commodious high-ceilinged chamber on the second floor. The scientist was at his desk, profoundly absorbed in the depths of a massive volume. He looked up hastily and then rose to meet us. I was vaguely acquainted with that stern well-seamed face—I had seen his picture on one or two occasions. It was not at all an unpleasant visage, if a trifle severe. Those same brown eyes confronted me as had searched us so curiously in the doorway of the drawing room downstairs only a few minutes ago. Miss Seagrave was certainly her father's daughter.

Vernon quickly broke into an explanation of my presence. I added whatever information I could, touching on my interest in my young friend and in the experiment of which he was now the subject. I had anticipated something in the nature of a sharp rebuff, and was agreeably surprised at its absence.

Dr. Seagrave paced with slow measured steps, his tall figure slightly stooped Then, stopping abruptly before the chair into which I had seated myself, he eyed me closely with those piercing brown eyes of his.

"So you are a friend of young Carl, eh?" he shot at me, "and you want to know what I'm doing to him?" He laughed a queer little cackle deep down in his throat. "Don't worry, my dear Mr. Nelson. No harm will befall my young subject here. He's being well taken care of, and," patting the boy affectionately on the shoulder, "he's performing a mighty fine job in the interests of science."

"I know, Dr. Seagrave," I said, "that it is not your policy to allow your secrets to become public property—prematurely. But my acquaintance with Mr. Vernon has resulted in my becoming extremely interested in the physiological changes which he has been exhibiting in recent weeks At the risk of appearing forward I respectfully request some enlightenment."

Again that throaty cackle as he switched his piercing gaze from one to the other of us.

"You are quite correct in your statement," he replied,

turning to me, "that I don't spill my secrets prodigally—and I have no intentions now of making any departure from that practice. The work that I am conducting with our young friend here is something of far-reaching importance. I shall divulge my methods and motives, and then the world will sit up and gasp—yes *gasp* at the significance of my contribution."

My crestfallen demeanor at this pronouncement must have been very marked.

"However," Dr. Seagrave added, with an odd twinkle in his eye, "while I am constrained from making anyone a partner to my secret at the present time, I may yet be able to tell you and to show you *something*."

I brightened up measurably, and shot a smile at Vernon seated near me. He returned my glance as if to say: "You win—although I didn't believe the old bird would do it!"

The doctor consulted his watch. "It's nearly time for the eight o'clock observation," he announced, turning to my young friend. Then, addressing me he continued: "Suppose, Mr. Nelson, you excuse us for about a half-hour while we go through with some routine matters in connection with this work. You may make yourself at home downstairs during that time. I believe Doris—that's my daughter, you know—is somewhere about the house. She'll furnish you with some reading matter if you care to occupy your time in that way. I shall call you when I have completed the evening's observations."

I found Miss Seagrave in the large chamber below, engaged in reading a popular novel. I was mildly shocked. I had almost expected that the daughter of such a profound scientist would be almost as profound.

She laughed a merry tinkling laugh when I put this thought into words, and flatly denied being any kind of scientist.

"You see, Mr Nelson, father is all tied up in his experiments and research," she explained merrily, "and so I have to keep matter-of-fact and non-scientific, in order to maintain the balance."

We chatted freely, principally about the doctor, Vernon, and the work going on upstairs. She was, of course, familiar with the general aspects of the experiment, how Vernon had come upon the scene, the initial "operation" performed by her father, the subsequent alterations in the nervous system of the youthful subject. I caught a strange note in her voice when the matter of Vernon's reversed nerves came up. It was apparent that she felt more than casually sorry for the young man in the discomforts that had resulted from the switching of his heat-cold sensations. A dawning suspicion came upon me as she spoke feelingly about the plight of Vernon—only she invariably referred to him as "Carl." The suspicion gained ground, and soon became a firmly fixed reality in my mind. I recalled the lad's evident confusion in her presence when we arrived earlier in the evening. It did not require a great deal of study for me to reach the obvious conclusion that these two young people were very fond of each other. Evidently they had been thrown together quite considerably since the inception of Dr. Seagrave's experiment, with consequences that were to be entirely expected under the circumstances. I chuckled to myself as the situation became clear to me, although I was careful not to give any hint that I understood the sentiment between them. I wanted to speak with Vernon first.

WHEN the latter himself appeared with the doctor's summons for me to come up to his laboratory again, nearly an hour had passed. The scientist apologized for the delay. The results were coming through so satisfactorily, he explained, that he had required a longer period for entering the elaborate data into his records. He was evidently in good spirits as a result of the evening's developments. Vernon too was all smiles, indicating that things looked promising, as far as my desire for information was concerned.

"Now to begin with, my good friend—I should say *friends*," turning to Vernon, "because I am addressing this little lecture to you, too. I've never told you anything definite about the nature of the experiment that I am performing on you. Well, to begin with, gentlemen, I am going to talk to you now merely in general terms. Remember that my efforts along the lines of this work have not been completed—they are barely begun. What they will ultimately lead to, I am frank to admit that I myself do not know. I can give you only a bare outline of what I am trying to do in my present study of the nervous system. What my objects are, what my immediate goal may be, that is my secret. It is enough to say that I am working on a matter which, if successful, will spell a great change for the race—for humanity of the future."

Starting off mildly and pleasantly enough, Dr. Seagrave's manner became tense as he uttered the last sentence or two. I detected a strange gleam in his expressive eyes. During the course of the evening I had almost forgotten about the things that I had heard regarding the doctor and his queer ways. He had appeared to be an altogether pleasant individual so far. And now that queer look and the heightening pitch of his voice as he spoke denoted a man obsessed by an idea—a crank.

"For years," he continued, addressing himself mostly to me, "I have been engaged in the study of the nervous system of animals and humans—that extremely complicated and unbelievably delicate network of fibers, which controls and regulates all the work of the body. During the course of my studies I have delved deeply into the structure and functions of this remarkable system and its component parts—the nerves—the spinal cord—the brain. Perhaps it appears as though I'm boasting, but I'll make the statement here and now that there are very few men who know more about the nervous system than I do.

"Now to the experiment. What is the object of it? That I cannot now tell you. What have I done? Well, briefly, I have taken a healthy human adult and performed a very delicate operation on his spinal cord. By doing so I have engendered a certain reversal in one particular sense—the one that registers heat or cold.

"Let me go into a little elementary physiology. Just roll up your sleeve for a little experiment, Mr. Nelson—no, it won't hurt you. There, now, I have here these two blunt metal pencils. One of them I warm up slightly in the Bunsen burner flame—so—the other I keep cold. Now if you please, close your eyes—I shall apply these two pencil tips at regular intervals on your forearm. You are to tell me at which point you feel the sensation of heat, and at which point you feel the sensation of cold—— That's the way—warm spot—cold spot. The spots that perceive warmth I mark with a red dot—the cold I mark with a black dot—— There you are—that's fine——"

After calling out mechanically for several minutes in accordance with the doctor's instructions, I was told to open my eyes and see for myself. My forearm looked as though I was suffering from a queer skin disease. A profusion of red and black dots covered the surface of my arm. They seemed to be about equally divided, and pretty thoroughly mixed, so that no particular area had more of one kind than of the other.

"So you see," continued Dr. Seagrave, "that there are two kinds of nerve endings in the skin, each of which is stimulated by a different temperature sensation. Two distinct sets of nerve fibers receive these impulses and transmit them to the central station in the spinal cord where they are translated into sensations of heat or cold.

"Now you may be able to guess what I have effected in my very agreeable subject, Carl. By making a certain adjustment at a particular spot on his spinal cord I have succeeded in crossing the two sets of nerves coming in from all parts of the body with their messages of heat or cold. With what result? Let us suppose the subject to be exposed to a temperature higher than that of the skin. The *heat-spots*—those which would be marked by the red dots as I have just done on your arm—promptly transmit their messages to the central nervous system in the normal manner. Reaching the spinal cord, however, there is a reversal. The heat message is side-tracked, and a directly opposite message is delivered. The result is that the subject feels *cold* instead of *warm*. A converse effect is produced by a low temperature stimulus applied to the body. The degree of the reversed sensation is strictly proportional to the original temperature, which means that a very hot object feels very cold, and *vice versa*.

"And now, Carl," he went on, turning to my young friend, "in simple language, that is the extent of the experiment on you—so far."

I did not relish the way he stressed the last words. I had a deep respect for the scientist's profound learning and expert skill as a nerve specialist. I marveled at his lucid and entirely nonchalant explanation of something which to me was so intricate and involved. Yet I was fearful of the consequences. Vernon's queer plight was unmistakable. I had witnessed his discomforts too often to pass them by as mere trifles. What was Dr. Seagrave driving at in this extraordinary reversal? What further changes were to be executed on the physical structure of this lad? What earthly benefits would be passed on to a suffering world by such unheard-of nerve changes?

I voiced some of the queries that were uppermost in my mind. Perhaps I spoke a little more sharply than the occasion warranted.

Dr. Seagrave's manner showed irritation. His stern look became almost a glare. One instant he was a methodical, almost pleasant medical lecturer. The next instant he was a frowning, growling tower of wrath. In his present mien he became more the Dr. Seagrave that I had heard of before—the irascible old scientist with a fiery temper and a caustic tongue.

"This experiment is my own," he announced with a haughty snap of his head, "and I know just what I am doing. Your young friend is being well taken care of, you need have no worry about that. He is in no personal danger—if he follows instructions. I can tell you no more of my aims, objects and future plans. It will all come out at the finish. You will then recognize that my work is of phenomenal importance to mankind. It will revolutionize human behavior and human life. It will be acclaimed as the most outstanding contribution that has ever been made to the betterment of man's position on this planet. And the name of Seagrave will go down in medical history as the savior of the race."

The doctor's eyes snapped fire, and his voice rose to a shrill pitch as he whipped out the last words. He was trembling perceptibly as he finished, and sank into his chair panting and glaring.

NOW I was convinced that the old scientist was irrational. A wave of pity swept over me—pity for Carl, subjected as he was to the sinister influence of this warped mind.

The boy himself hastened to bring about a clarification of the tense situation. He strode over to where the doctor was slumped in his seat. "Really, Dr. Seagrave, Mr. Nelson doesn't mean to be rude. I'm sure his intentions are perfectly all right. And as for me, I'm not complaining. You can count on my standing by you in this work until the very end."

I hurried over to add my own apologies. "I ask your pardon, doctor, for appearing offensive. Your present work on nerves is of undoubtedly high merit, and will, without question, be an outstanding achievement in science when it is completed. But my thoughts were of Carl and his welfare. And I am convinced now that you are safeguarding him so that no harm can befall him." My heart knew that I lied. I was positive that Carl's position was a precarious one—that his health, and even his life were being put into great jeopardy for the sake of a crazy experiment.

At this moment Doris appeared at the door of the study.

"It's ten o'clock, father," she announced, and then turning to me she added by way of explanation: "You see, Mr. Nelson, it's time for father's warm eggnog. I've got to treat him just like a baby. He may be a great nerve expert, but he often forgets himself in his work. If I didn't look after him he'd just ruin his health."

At this moment she perceived the agitation that lingered in the demeanor of her father as well as the somewhat strained atmosphere in the room.

"Really, Mr. Nelson, you'll just have to excuse father now. He's been working hard on this problem of his, and he hasn't been feeling altogether well of late. I'm afraid this work on nerves is getting to be too much for his own."

Dr. Seagrave reassured her smilingly. He seemed to have recovered his composure almost entirely. He shook hands with me cordially, no signs of his recent acrimony now visible, and retired with Doris into another room. Carl ushered me downstairs and out of the house into the mild June evening. He accompanied me home, and we were together until long past midnight, discussing the developments.

"The old doctor is a crank, all right," vouchsafed my companion.

"He certainly is a queer mixture," I replied thoughtfully—"a hard-thinking, hard-working scientist on one side and an out-and-out bug on the other. Do you feel yourself safe in his hands, Carl?"

"Well, I can't say that I always do, yet—is my position really so terrible? Dr. Seagrave took me, a home-

less, hopeless bum, and provided for me better than I could have imagined being provided for in my wildest dreams. The funny twist that he's made on my nerves? —well—so far I've been able to stand it. His plans for future experiments that he expects to work on me? —I guess I can take my chances on that. And besides, there's—there's——?"

"There's what?"

"Doris!"

His face lit up like a full moon and he leaned toward me eagerly.

"Gee, Mr. Nelson," he blurted out, "I've been wanting to tell you right along about Doris——"

"And," I smiled, "I've been seeing it right along this evening."

"What did you see?"

"That you're both pretty sweet on each other, that's what. Carl, I could see your attitude toward the girl at the very start tonight, and, as for the way she feels about you, why anyone could make that out without the aid of a microscope or a pair of field-glasses. All I had to do was to mention your hot-cold reversal, and the bother it is to you at times, and she was beside herself with sympathy and genuine pity. Why, Carl, the way that girl shows concern about your welfare, you mean more to her than the mere subject of her father's scientific experiment."

The young man flushed crimson. "I—I—know she's worried about me," he managed to stammer—"doesn't want any harm to come to me—yet she can't see herself crossing her father in his pet problem."

Carl related to me the circumstances of the romance and its development. From a strictly formal acquaintanceship between them had grown a mutual attraction which had now blossomed out into a real fondness for each other. Of leisure time the boy had an abundance. Residing under the same roof, being thrown together so much, both being young, agreeable, attractive and full of the joy of living, could they be blamed if love resulted?

THE Summer progressed, and with it came new developments in Carl's situation. I saw him nearly every day, and could ascertain from personal observations how things were faring with him. Physically he was miserable. On a blistering hot day he would stamp into my office with a heavy coat wrapped tightly about his body as though coming in from a howling blizzard. His hands, encased in enormous fur-lined gloves, were thrust into his huge pockets for added protection. His face would be blue with cold, his lips bloodless and trembling, his teeth clicking as he muttered a greeting. My associates really took him for a madman, and often, I dare say, when they observed me apparently so intimate with this extraordinary character, entertained serious doubts as to my own sanity. However, I never made known the peculiar circumstances of the case, because I desired to spare my friend's feelings, and furthermore, was in no mood for going into extensive explanations at this particular time. More often, Carl sought me in the greater seclusion of my bachelor quarters, where he could relax and tell me about the development of Dr. Seagrave's nerve experiment, as well as the latest about Doris.

"The doctor is more elated than ever," explained my friend one scorching Saturday afternoon after he had had an opportunity to thaw out (?) somewhat. "I seem to be responding to the changed state of affairs just the way he wants me to, and he's getting a whole lot of satisfaction out of this business."

The unfortunate lad rubbed his hands together briskly so as to restore the circulation in his numbed fingers. Then suddenly he ceased his exertions and sank limply into a chair. "It's no use," he sighed with a weak smile. "I forgot—it's no use."

"What's no use?" I cried in alarm, "and what did you forget?"

"I forgot that I'm not normal," he explained through lips that were bluish with cold. He looked down sadly at the hands that he had been massaging so vigorously. "I forgot about what the doctor explained to me in connection with this very matter. You see," he went on, "when I rub my hands together to warm them up, I generate heat by the friction. But do I feel it as *heat?* No!—I'm *reversed!*—It registers on my system as *more cold!*—He's told me about that often, but I keep forgetting."

"By George, Carl, can't you do anything to get relief?" My heart went out for this sorely stricken youth.

"Yes, I suppose I can. All I have to do is to put myself into a chamber that's kept constantly at an even degree of heat—what is the normal moderate room temperature?—about 68° or 70°, Fahrenheit, isn't it? Then I wouldn't feel either too hot or too cold—in other words, perfectly comfortable."

"And why don't you do just that thing, Carl?—Certainly that's the least that Dr. Seagrave would provide for you——"

"That's just what he's offered to do for me—from the very start, too. But you know me, Mr. Nelson—I've told you about my past life—always outdoors—lived, played, worked, slept, roamed out under the skies—never could stand any job that confined me indoors. And so, at the present time I've got to be out during my off hours—can't bear four walls around me, and a roof over my head—just not used to them, that's all."

"And there's another thing," he continued. "Dr. Seagrave explained that matter to me too, but I keep forgetting about it all the time. I don't know if I can get the science of it straight for you, but here's how it goes: In weather like this, you know, when everything appears like it's burning up, naturally, I feel as if I'm freezing to death—that's because of my short-circuited nervous system. Now you remember when the doctor showed you how your hot-cold nerves work by that red-and-black pattern on your arm? Well, in my case now, when the heat message travels along my nerves to my back-bone it registers cold there. What happens next? Why, according to the doctor, a message goes back to the skin along a different nerve, and it tells all the pores on the surface to close up, because it's cold outside, and they've got to conserve all the heat inside the body. He says that's the normal way that all human beings act—it's a way the body has of keeping up its temperature even in zero weather. But what's the result in my own case? Can't you guess? Why the pores in my skin all close up in accordance with the message just sent out from the central station, and there I am—all tight as a drum—with all the heat bottled up in me, and all the heat outside of me, and more heat coming—and the more the heat the colder I feel—Gee, Mr. Nelson, it's awful. And not only does it feel that way, but I've

got to be careful or I'll ruin my health—and the experiment too—so says the doctor. He told me that at a time like that, with all the heat piling up in me and all around me, I could get a heat prostration or sunstroke, or something! Just imagine—getting sunstroke and freezing to death all at the same time! Ha—ha. The doctor gave me instructions as to what to do to avoid that. Says that I mustn't dress so heavily in this hot weather—that would give the extra heat a chance to escape from my body. I tried doing that for a while, but—darn it all, I nearly froze.

"And in the same way he has it all figured out for winter—although goodness knows that's far enough away. He told me that in very cold weather my nerves will register heat, and so the messages will go back to the skin for the pores to open up and the blood to circulate faster near the surface of the body, in order to give off extra heat. And so I'll really be cooling off faster than is good for me, even though I feel as though I'm being broiled alive. The doctor made sure to explain to me that, when such time comes, I must not yield to the temptation to get rid of most of my clothes—that I'll have to wear extra heavy clothing to keep in the heat, even though I feel like I'm burning up. He made it clear, of course, that I wouldn't have to worry about that angle of it for about six months, but he just wanted to make sure I had it straight so as I'd know what to do when the time came."

"Well, Carl," I remarked, "you certainly are in a bad way with this lunatic experiment. Isn't there anything I can do to help you out—to make things more bearable for you?"

"I'm afraid not, Mr. Nelson—at least not just now—I'll have to suffer it through the best way I can. However, there's one bright star that makes things more endurable——"

"Doris?"

"Yes, Doris! We're—we're very fond of each other—and she—I—we expect to get married some day."

"Congratulations, my boy," and I shook his hand warmly—or should I say coldly, considering the reversed condition of Carl's temperature nerves.

"Of course, Mr. Nelson, we can't think of any such thing just yet—not the way I'm fixed at present. But, when this matter of *nerves* is all over, then——!"

My young friend certainly exhibited all the earmarks of being sorely smitten.

"Does her father know?" I asked.

"Ah!—that's where the hitch comes in! The doctor isn't on to it yet—we've managed to keep it a secret from him so far. And he's so tied up in his work on this experiment that he doesn't know what's going on around him. Well, it's for the best that he doesn't know yet."

"Why not? He'll have to be let in on the secret some time."

"True enough, but—but we don't know how he'll take it right now. You see, Doris is all he has in the world. She's been his constant companion, nurse, helper—almost a mother to him for the last five or six years. He'll never consent to part with her. She means so much to him. Especially the way he's been acting of late."

"Why!—how has he been acting?"

"Queer. At least—queerer than usual. You remember how he got himself all worked up that evening over in his laboratory? Well he's been getting more of those spells of late. Maybe it's the strain of the work in connection with this experiment of his. I know that he's up until all hours of the night busily engaged in measuring and planning and reading and making records. He's getting ready for some new stunts on my system. All his talk is about that, and only that. And a lot of his talking is done to himself. Most of the time he has that funny look in his eyes—the same as he had that evening when we both were up to see him together. He's awfully irritable too—flies off the handle on the slightest provocation in spite of the fact that the experiment at the present stage is turning out pretty satisfactorily—at least he's always telling me that it's coming along first rate."

"No, Carl, I guess now wouldn't be the right time to tell the doctor. In addition to all the reasons you gave, there's another too—he probably won't feel delighted at the idea of losing you, the subject of his experiment, at this stage of the game."

"Of course, I'd make it clear to him that I had no intentions of quitting him before the end of all his work on nerves. However, Doris and I have talked the matter over from all possible angles, and we've decided not to let the cat out of the bag, as far as her father is concerned, until the time is ripe. At any rate, it's Doris that makes the outlook a little more bright than it would be—and of course, Mr. Nelson, there's your friendship too—I mustn't forget that."

ONE humid Sunday morning in mid-August found me strolling north on Riverside Drive, a bulky sheaf of Sunday newspapers under my arm. Just another of my simple bachelor habits—to find a shady spot, a secluded park bench, and browse at leisure through the voluminous reading material furnished on the Sabbath morning.

Passing under the massive concrete approaches of the majestic George Washington Bridge that flung its mighty bulk across the Hudson River, I turned into the tree-sheltered lanes of Fort Washington Park. Here was a bit of country that nestled serenely on the bank of the river, just a step from the bustling city. Except for the broad shadow of the bridge roadway that crossed far overhead, and an occasional glimpse through the trees of the wall of fashionable apartment houses skirting the cliff above the Drive, there was no evidence of the life of a vast city near by. Only a few people were astir at this hour—just an occasional early riser like myself, enjoying the Sunday morning calm along the sheltered footwalks.

I rounded a bend in the path, close to the water's edge, and was about to settle myself on a sheltered bench when I happened to look up. I observed a couple arm in arm slowly approaching. My intention was immediately centred on the man. I recognized him long before I could make out his face. There was no mistaking that tall figure, bundled up in that familiar heavy overcoat, collar turned up, only a pair of eyes visible from its depths. Carl Vernon! And it was almost as easy for me to see that the girl by his side, her arm linked affectionately in his, was Doris.

They both drew back abashed when they recognized me. I announced my greetings to them in cheery tones. Carl was the first to reply, and his tone was hesitant.

"Good morning, Mr Nelson! Nice day, isn't it? You're out pretty early, eh?"

"I see you two are out just as early," I replied laughingly. "But why act like a couple of criminals?"

Doris blushed. "Do we really act that way, Mr. Nelson?" she asked, winsomely. "I—we—we really surely don't mean to give that impression."

"You know the situation, don't you?" chimed in Carl earnestly. "We can't very well see each other much in the house—we daren't arouse Dr. Seagrave's suspicions—he'd be furious——"

"And so," continued the girl, "we make this park our rendezvous, so to speak."

"I don't blame you young people," I chuckled. "Love finds a way, eh Carl?"

Doris blushed again, and they both stammered their protestations. We had meantime seated ourselves on a bench overlooking the river. Carl told me that they had been making this a frequent practice, meeting here in the park at such times when he was at leisure between his observation periods, and when Doris could steal away from the household and other duties that claimed her attentions at home. These were rare sweets, these clandestine meetings.

At this point I protested that my presence was entirely superfluous, and that I ought to hurry along and leave the young people to themselves. After all, I argued, they were out here to enjoy each other's company, and a middle-aged codger like myself did not fit into the picture somehow. In almost a single voice they brushed aside my arguments—in fact they demanded that I remain there with them. They wanted somebody to whom they could pour out their souls.

Carl admitted to me that he frequented this tiny park spot during much of his free time, even when Doris could not manage to be with him.

"It's so close to home—Doris' home——" he explained, "and so conveniently located. And besides, I can get plenty of privacy here." The thought came to me in a flash: The poor boy needs privacy in his condition. Accustomed as he was to the outdoors, and with his present affliction of reversed nerves, he could find no better spot than this to spend his leisure time far away from prying eyes. With that mid-winter outfit in which he was attired, he would be taken for a crank or a lunatic, and in a less secluded spot, would soon be the centre of a curious crowd. I recalled the manner in which he had impressed me down in Central Park that warm evening in June.

"The doctor knows that this spot is my hangout," added Carl, "although," with a merry little laugh, and a fond glance at the girl by his side, "he hardly suspects with whom I hang out here most of the time. You see, Mr. Nelson, he and I often come down here for the purposes of the experiment. Many times he finds it necessary to make tests on me under outdoor conditions. We've tried a lot of different places all about here, and Dr. Seagrave has come to the decision that this little park beats them all for seclusion, nearness and general merit. And he knows that this is the spot I generally go to when I want to get out of the house and wile away a couple of hours by myself. Only—he doesn't know that I'm not always by myself—eh, Doris," and he nudged the girl meaningly.

The time passed, with talk and pleasantries of all kinds. Throughout it all, I could see that Carl was not very comfortable. I had almost forgotten about his reversed condition in the general banter and conversation among the three of us. But as we sat there, I observed that he shrank more and more into the enfolding sweep of his great overcoat. He tried to maintain a cheerful exterior, but his talk became fragmentary and dispirited. I could see the reason. The morning had begun mildly warm, but, as the sun climbed higher over the tops of the apartment houses lining Riverside Drive above our heads, the temperature rose steadily. The slight breeze that had sprung up from the river earlier in the morning now died down. The atmosphere became uncomfortable and oppressive. Even though we were seated on a shaded bench, we were only slightly protected from the heat.

Occasionally Carl tried a burst of wit to indicate that he was not being discommoded at all, but they all fell flat. Doris attempted bravely to console him in his trial. She tried to put the blame on herself—said that if not for her, Carl would not be outdoors so much in the excessive heat—which meant excessive cold for him—averred that he would instead have availed himself of her father's offer to have him remain in some enclosed place where a moderate temperature was artificially maintained, so that he would not have to suffer from extremes of heat and cold. Carl in turn, his teeth chattering incongruously as he spoke, absolved Doris of any responsibility in the matter. He knew his own mind and he was willing to stand for these hardships which, he stoutly maintained, were no real hardships at all.

My heart went out for this pathetic couple in their trying plight. Again I was seized by a strange revulsion against Dr. Seagrave and his ridiculous experiment.

"I don't really see why, Miss Seagrave—Doris, if I may——" I asked seriously, and with some feeling, "I don't see why your father should continue to torment this poor boy——"

"I most certainly agree with you, Mr. Nelson," replied the girl with a catch in her voice—"I can't see the sense of it at all. And, if I had my way, I'd have father put an end to this silly experiment today—right now! I know it's absurd, it's cruel—it's not human!——"

"But Doris," interrupted Carl, "it's for the interests of science!—it's going to turn out to be a great blessing to humanity in some way or other—doesn't your father keep telling that to us all the time. And best of all, it helps to keep me near you——. Just forget about my hardships or whatever you want to call them, Doris. Really, darling, I'm not suffering—so much!"

The girl leaned her head caressingly against his chest, while he flung his arm encased in a huge overcoat sleeve about her shoulder.

"I don't like to appear forward, Doris," I broke in, "but perhaps you can prevail upon the doctor to let up on this work. I'm sure he would listen to you. If any one could influence your father to restore Carl to his normal self again, it's you. I think this absurd reversal has gone far enough. I think he ought to be compelled to discontinue it before any real damage is done."

"Oh, Mr. Nelson!" cried Doris pitifully, "you don't know my father. He can't be moved so easily. I've already tried to—several times. I pleaded with him to stop the experiment because of the danger to which Carl was being subjected. Of course, I didn't dare show that I had any more than just a casual interest in Carl—that I was sorry for him in his twisted nervous condition. But he wouldn't even think of it. He insisted that he was just starting his great masterpiece—that

he meant to continue and finish it. I begged him to curtail his work for the benefit of his own health—you know he's in a frightfully rundown condition because of the long hours he has put in on this nerve research of his. He nearly flew at me then, he became so incensed. I had never seen him act that way toward me before. He flatly refused to let me talk of the matter any more. On several other occasions, I've tried to bring up the matter, but he shuts me up instantly. Oh, Mr. Nelson!—it's—it's—*heartbreaking——!"*

The girl buried her face in the folds of Carl's coat, and sobbed faintly.

"Come, Doris dear," pleaded the boy. "Don't get all worked up over it. You know the situation isn't so bad. This business of nerves isn't killing me, you can see that plainly enough. And what if I *am* put out slightly by a little hot weather such as we're having now? It can't last forever. And this blamed old experiment can't last forever either. Some day your father is going to turn the trick that'll put me back in my old condition once more. Then it's all going to be a bad dream, all except that I had you during this entire spell of scrambled nerves. Now don't cry that way, Doris. You know that it's you who's cheered me up all along. And it's you who'll give me the courage to stick it out until the end."

He stroked her head soothingly—his fingers blue with cold and trembling.

THE mild weather of September and early October saw a decided improvement in Carl's strange plight. I saw him frequently during those weeks, sometimes alone, more often in company with Doris. The lad's physical condition was now more nearly normal than I had ever observed it. Only on rare occasions was he ever more than slightly discommoded by his state of reversed nerves. Both of them had apparently forgotten those trying days of midsummer, and they were eager to confide to me the story of their happiness. They were looking forward with eager anticipation to the day when Carl would be released from his twisted condition and really be a normal individual once again.

Only a single thing seemed to cast a cloud over the situation, to mar the complete happiness that was theirs at the present time. It was the doctor himself. Doris admitted to me that her father was acting more and more queerly—she was really in a quandary about him—should she try to reason with him, to persuade him to desist from his work in the interests of his own health?—should she employ determination, even force, in compelling him to call a halt before it was too late?—and yet how could poor little weak she even *think* of force?

Yet they clung to the fond hope that he would soon reach the end of his experiment and voluntarily terminate this period of strain on all of them. Carl added that Dr. Seagrave was already taking the preliminary steps in the last stage of his nerve reversal project. The boy admitted that he did not know what this new angle of the work was all about, but it was going to be something startling. Not that he dreamed it, for he had been through enough during the past few months to innure him against any new terrors that it might hold in store for him.

Following a protracted Indian summer that embraced nearly the entire month of November, the chilly spell of real winter fell upon the city with sudden force. And with the coming of sub-freezing temperatures things began to appear less rosy for Carl and his reversed nerves. All of us, Carl, Doris, myself—I suppose Dr. Seagrave too—knew just what to expect on the arrival of winter—and none of us was disappointed. As the populace took to its woolen underwear, fur-lined coats, heavy gloves and voluminous mufflers, Carl began discarding his superfluous garments one by one.

On a blustering evening shortly before Christmas, with the temperature well below freezing, and a raw wind from the northeast whipping flurries of snow—the first of the season—along the deserted streets, Carl burst in upon me in a most unconventional fashion. I was seated before my open fire-place where a cheerful blaze crackled and flickered among the logs. I looked up hastily to contemplate an outlandish figure.

Carl wore a pair of thin cotton trousers that flapped grotesquely as he walked. His coat he carried slung over one arm. He was vestless and tieless, and his flimsy shirt was opened wide at the collar. His sleeves were rolled up tightly far above his elbows. He wore no hat. His face was flushed and beads of perspiration stood out on his forehead. Sinking heavily into a chair near me, he fell to fanning himself vigorously with a folded newspaper.

"It's got me the other way, now!" he gasped. "Feel like I'm being *fried!* Say, Mr. Nelson, this fire you have here is great!—just the thing to cool me off!" He drew his chair closer and spread the palms of his hands outward toward the flames, as though to grasp the welcome warmth—the welcome *cold* in his case.

"I think it would be best for you, Carl," I ventured, "if you took Dr. Seagrave's offer about that special room with the even temperature. You certainly can't be doing yourself any good by parading around in freezing weather dressed the way you are."

"Yes, I know, Mr. Nelson, "the youth answered imploringly, "but I just can't stand being cooped up—I just can't!"

"And remember Carl," I added sternly, "what the doctor told you about the risk you are taking—the risk to your health. You recall how he explained it to you—that you may feel as if you're being boiled alive, but in reality the internal heat of your system is escaping through your skin so fast that you stand in grave danger of freezing to death."

Carl buried his face in his hands and moaned softly.

"Yes—yes!—I know!—I know it all—but I can't help it—just can't help it——!"

He lifted his flushed face to me and gave me a pitiful look. "I wonder how much longer it's going to last. I—I'm beginning to get tired of this—this experiment. Just imagine, Mr. Nelson. For years I was a homeless bum—roaming about—freezing in winter—roasting in summer. And now look at me!—no longer a tramp, but freezing or roasting just the same—only the other way around——!"

I tried to console the poor fellow, as best I could. I reminded him of the satisfaction of a job well done—of the great public acclaim which would be his at the ultimate completion of this work—of the great benefits to mankind. (I admitted to myself frankly that I could not understand what those mysterious benefits would be, but the doctor seemed to feel that they would be enormous. I let it go at that).

I brought Doris into the matter, too. I reminded Carl

gently of the girl's strong devotion to him. I really considered it a most beautiful thing—this gloriously undying attachment in the face of such great physical handicaps—and I told him as much.

He appeared relieved, partly because of my cheering words, partly because of the moderating effects of the mild indoor temperature on his reversed heat nerves.

Winter continued in all its severity and fury—a winter more vigorous than I could remember for many years back. I continued to see much of Carl and Doris. The young fellow had completely lost that buoyant optimism that had characterized him during the trying summer period, and the more bearable fall and early winter months. He was gloomy and morose almost constantly—plunged in an abyss of pessimism from which even Doris' gentle ministrations could not raise him. Poor fellow—strong and vigorous though he was, the unnatural reversal was beginning to tell on him—not so much physically now as psychologically.

In the midst of an extremely severe cold wave during the last few days of the waning year, Carl confessed to me that he was giving serious thought to the idea of running away—where, he did not know—but anywhere—away from Dr. Seagrave and his infamous experiment. But he checked himself peremptorily. What was he talking about? Run away? With that confounded curse in his nerves? Always to remain reversed? Not a chance in the world of being set right again? No!—that would never do! And then there was Doris! Could he run away from her?—like a coward. No, never! He'd have to dismiss that crazy idea from his mind, and go on with this insane experiment until its ultimate completion—whenever that would be——

On a different occasion, when the young fellow appeared to be particularly depressed by his deplorable plight, he spoke to me of another thought of his—*suicide*. He caught himself immediately, abashed. What sort of an idea was that, anyway? Destroy himself? That would never do! Only a coward's way out of a difficulty——!

I addressed gentle words of cheer and comfort to the unfortunate lad. But in my heart I felt the blackest thoughts. Wasn't there any earthly way of forcing this mad scientist to stop torturing a poor defenseless human in the way that he was tormenting young Carl? I determined to myself that I could not stand by much longer and see this inane travesty on science continue. Something drastic would have to be done—and that very soon, too, if a tragedy was to be averted.

Thinking the matter over in my calmer moments, I concluded that the best procedure would be for me to pay Dr. Seagrave another visit and lay the matter before him in a rational and sensible fashion. I thought that if the entire subject were presented to him on the basis of justice and sound reason, the doctor could be persuaded that he was perpetrating a ghastly wrong on an innocent human being in the questionable interest of science. The more I revolved the matter in my mind, the more it struck me as pointing to the only way out of this dilemma.

I summoned Carl and Doris to my home and broached the matter to them. They were both gloomy about the efficacy of such a move—Carl more so than the girl. He knew the doctor too well now to believe that he could be dissuaded from his pet work by any considerations of logic or justice. The scientist, now about to launch his contemplated extension of the nerve experiment—a project that involved nerve reversals of a higher and more involved order—would not be expected to consider for one moment the notion of throwing his life's work overboard at this stage of its progress.

The situation was becoming increasingly more tense every day and it soon became evident that something drastic would have to be resorted to promptly. With considerable trepidation, and no end of misgiving, Carl and Doris were finally persuaded to let me try my luck with her father. After all, I reasoned, enough harm was being perpetrated now, and now my own poor efforts would certainly not add to the sum total. And there was still that one lingering hope that Dr. Seagrave would be made to open his eyes to the deplorable plight of his subject, Carl. At any rate, I was willing to risk the ire and venom of the scientist, if I could manage to do some good in this pitiful state of affairs.

I WAS seated in Dr. Seagrave's drawing room, nervously fingering my hat. It was the day following our decision to act, and we had acted without delay. Doris had arranged with her father the hour of my visit. She had succeeded in getting her father to consent to my coming on the pretext that I was anxious to obtain more information regarding his work—data along the same lines as those which he had propounded at our first interview.

For a short time I was alone in the room, collecting my thoughts, and marshalling in my mind the array of arguments that I was prepared to hurl at the adamantive fortifications of the doctor.

Presently Carl entered, pale and drawn. The ordeal of the last few weeks were certainly beginning to leave its stamp on him. He had just been through one of the regular observation periods with the scientist—and he appeared worried. Things were not going so well, he admitted to me in a hushed whisper. Some of the tests weren't panning out properly. Maybe it was because of Carl's lowered physical condition—maybe for some other reason—at any rate the doctor was getting results now, that didn't seem to jibe with his previous records, and with his predictions as he had mapped them out. Carl was certain that they were just minor differences—little inconsistencies which later experiments would clear up. But they were annoying to the doctor, and he was acting more irritable than ever.

"The old fellow is wild," breathed Carl to me. "When I left him just a few minutes ago he was walking around up in his laboratory like a caged lion—grumbling and mumbling under his breath—pulling at his hair as though he were going to yank out whole bunches—I've never seen him worked up in this way before. Doris is with him now—trying to quiet him down—she told me to go out and let her handle him alone—they'll be down soon, I guess—but this is about the worst time you possibly could have picked, Mr. Nelson, for trying to reason or argue with him."

I spoke reassuring platitudes to my young friend, but I will confess that, for the moment, my heart sank like a lead weight and I began to have strong misgivings myself as to the ultimate success of my mission.

Suddenly the door opened and the hulking form of the old doctor appeared. Doris hovered behind him hesitatingly. He strode boldly into the centre of the room, and faced me with a dark scowl on his hard face.

"Well," he snapped unceremoniously, "you're here again, eh—with some more of your fool questions and talk!"

I swallowed a lump in my throat, but kept my peace. This was no time to show any resentment at fancied offences. I could see that the doctor was going to be a hard customer to reason with in his present frame of mind.

He paced the room several times while the three of us eyed him apprehensively. Then he turned abruptly to me again.

"I know that Carl has been coming to you quite a lot of late—I'll wager he's been filling your head with all kinds of stories about imagined cruelties and such—— Haven't you now?" wheeling about fiercely and facing the young man.

Carl, his face pale and tense, spoke up boldly: "No, sir! That's where you're all wrong, doctor—I haven't been complaining at all!—I——"

"Dr. Seagrave!" I burst in without ado. "Please don't put any blame on this boy—he's suffering under enough of a burden as it is. I came up here on my own free will—on behalf of my young friend here, who, I am convinced, is being done a grave injustice."

"Injustice!" echoed the scientist with a faint sneer in his voice. "Injustice, you say—do you call it injustice for me to take him right off the streets and make a self-respecting man of him?"

"Your experiment!—your nerve experiment," I replied hotly—"it's *killing him!*"

"Ah! My experiment!—my grand experiment!" Dr. Seagrave's eyes flashed fire, and his entire frame shook in agitation. "It's coming along—coming along—encouring results for the most part—now and then a little setback—but always on—on—to the final goal!"

Doris hovered in the background with a frightened look in her eyes. Carl was slumped deep in an easy chair, his face wearing a woebegone expression. I eyed the scientist narrowly as he paced the floor nervously, his trembling fingers playing through his hair in an abstract fashion. I was dealing with a madman—that was a certainty.

"Dr. Seagrave," I began gently, "I am no scientist. In spite of that I have the highest regard for your well merited reputation as an outstanding figure in the modern scientific world. I come to you on a mission of mercy. You don't know—you can never imagine the acute suffering that you have caused—are now causing—this boy, Carl."

"Suffering!" broke in the doctor sharply. "That's not suffering—that little inconvenience which he is experiencing at times. I've made it as comfortable for him as possible—I've instructed him concerning what he should do to maintain this comfort. I confess he's not often taken my advice—has ideas of his own, apparently," with a shrug of his shoulders, "that's his own lookout."

"That's *your* lookout," I maintained resolutely. "Your experimental work on him has brought him into an appalling physical and mental condition. His health, his very life is in serious danger. My humble opinion, Dr. Seagrave, is that you have gone far enough. It is now time to call a halt in this work of yours, and restore this young man to his normal faculties before—before it is too late."

Dr. Seagrave stopped his nervous gyrations, and faced me squarely. "Let me remind you, sir, that *I* am running this particular project, no one else. *I* know when to call a halt, and when to keep on going. I need no advice!—Ha!—Ha!——" He continued his agitated pacing. "Why, man, I've only just commenced my great work!—made only a feeble beginning—and give it up now?—Ha!—how ridiculous!"

"Nerves!—Nerves!" he went on abstractedly, while the three of us sat in silence, watching him with acute apprehension. "My hobby and my life work—nerves—nerves of all kinds—hundreds of nerves! I have already succeeded in reversing the heat-cold sensations—that you are already familiar with. I have that angle of it pretty thoroughly in hand now. But—ah!—that's not all! That's only the start. There are other nerves to reverse—many more nerves to juggle and play around with—healthy, vigorous nerves of a healthy vigorous adult human being——!"

The cold-blooded horror of it overwhelmed me. I was about to burst in with something curt, but the doctor went on.

"There's the sense of sight—just picture if you can the possibilities in this one sense alone!—a simple manipulation of the optic nerve—and behold—a reversal in that particular sense. I'm not prepared to say just what one would expect under such reversed conditions, but the possibilities are interesting—extremely interesting!—and then there's the auditory nerve—reversal in the sense of hearing—high notes for low notes—low for high—discord for harmony—what a wealth of information to be derived along those lines. Of course, the optic and auditory nerves will be hard to get at—they lie buried deep in the interior of the brain—but I shall get to them—don't worry about that—I shall reach them! The same holds true for the sense of smell—accessible with difficulty, but offering a highly interesting field for work in nerve reversals—and the sense of taste, too—more opportunity for valuable research and experimentation. Then will come the other senses that are recorded by the various parts of the nervous system—the sense of touch and pressure—the sensation of pain—the sense of electrical stimulation—all—all capable of some form of reversal—all offering boundless possibilities for investigation—all to be the subject of my experimentation in the next stages of my research——"

AGAIN the doctor's voice had risen to that same high-pitched tone with which I had become acquainted during our first interview. He was nearly beside himself with the nervous intensity of his excitement. Sitting there, speechless with amazement, during this insane recital, I was nearly overcome by an unspeakable nausea at the whole idea.

"So you see, Mr. Nelson," the scientist smiled in triumph with an air of finality, "This is hardly the time for me to call a halt on my experiment—hardly the time. I've made only a faint beginning."

Here I found my voice, even though it was a decidedly weak and shaky one. "It is absurd, ridiculous—*inhuman!* To subject this lad to such—such unspeakable outrages is beyond any power to comprehend. I know that you have some kind of legal hold on Carl—he signed up with you in some manner at the start of this infamous work, although I haven't any idea as to what he signed—and I suspect that he himself has no more of an idea. Man alive! It's the *human* side of it!—can't you see? You're killing the boy by inches—playing with

his physical structure—reversing him—tying him up into a hopeless, inhuman tangle—*killing* him! And for what? For some mythical contribution to scientific achievement and to the improvement of mankind in general. Achievement! Improvement!—bosh——!"

"Sir!" ejaculated Dr. Seagrave harshly, while he glared at me with a strange fierceness in his eyes. "Don't you come here to tell me my business! I won't have it. I've told you just what I expect to do—and I expect to do it!"

My heart was a turmoil of emotion that sought expression. I gulped convulsively, and glanced at the two still figures in the room with us. Doris and Carl were silent and motionless, as if in a strange stupor. Poor kids!—what could they say under such circumstances?

"And now," continued the scientist hoarsely. "now that I've told you of the next developments in nerve reversals, let me tell you the rest of the story. Then you'll have it all complete. When I'm through with altering the nerves of sight and hearing and taste and the others, then I'm going to the crowning development of this great work. Do you know what that is? No! I don't suppose you do. Did you ever hear of the emotions of anger, joy, hate, fear, jealousy, love? Did you ever know that these emotions depend entirely on the action of nerves?—that they are linked up intimately with the structure of the nervous system?—that the nerves upon which these emotions depend are as easily reversed as are the heat-cold nerves? Do you see now where that leads us? A new kind of reversal—an entirely unheard-of change—fear into courage—hate into. love—*love into hate*——!"

At the mention of the last few words I felt a sudden sickening jolt within me. My heart pounded furiously, and a wave of emotion surged up in me. I observed that both Doris and Carl became deathly pale. They cast glances of horrified amazement at each *other*, at the doctor towering there in the centre of the room, and then at me. I returned their glances feelingly. I believe that the horrible significance of the last statement dawned upon the three of us almost simultaneously.

"This thing has got to *stop!*" I exploded, rising from my seat and advancing toward the mad scientist. "This must come to an end here and now!—it can't go on any longer. Remember, Dr. Seagrave, that there are certain authorities to whom I can go—to whom I can present this whole ghastly spectacle that is masquerading as a scientific experiment. I can lay the entire matter before the authorities of the hospital under whose name this insidious job is being done——"

"Rubbish!" interrupted the doctor, with a harsh laugh. "This is my own private work. The hospital has nothing to do with it."

"——or, if that won't obtain any result, I'll go to the police. I'll explain it all to them—this beastly torture—this——"

"That will get you nowhere, my dear man," sneered Dr. Seagrave. "How are you going to prove anything? It's your word against mine. Can you convince them that a crime has been committed? Have you any tangible proof? The authorities will laugh you right out of the picture. No! You won't interfere with my experiment!—you can't, I tell you! I mean to follow it out along the lines I've just described to you—follow it out to its ultimate completion!"

He chuckled with a ghoulish glee, and then went on to express another thought which appeared to come to him at the moment.

"And remember too, my meddling Mr. Nelson, this one fact: If my work is hampered in any way—if the authorities, whoever they are, should step in and curtail this experiment—if any harm of whatever sort should befall me before my research on nerves is completed—can you picture the consequences? Ah!—I see that you understand! At the present moment, our dear young friend Carl over there is helpless without me. *I* have reversed part of his nervous system, and *I only can restore him to a normal state.* The secret rests with me. There isn't another nerve surgeon alive, who would be capable of effecting the change. If my task is interfered with in any way, then Carl is doomed to a reversed existence for the rest of his life. So you see, don't you, that it is for the best interests of all concerned that nothing be allowed to hamper this highly important project. And I repeat! I shall not permit anything or anybody to interfere with my experiment! I mean to follow it out to its very completion!"

I experienced an overpowering and hopeless sense of defeat. How could you reason with a man like that? I determined on one last desperate thrust against the fortress that this demoniacal scientist had built up around himself.

"If this things keeps up," I said as quietly as I could. "you will no longer have a living human subject to work on. Carl is in great physical distress. He is sunk in a great mental dejection as well. He talks of suicide. I have tried to dissuade him—to argue him out of this feeling. But my arguments have done no good. He is in deadly earnest about it. He means to carry out his threat, if he is subjected much longer to these physical indignities. And, if he destroys himself, then——"

"Suicide!—fiddlesticks!" scoffed the doctor, with a sidewise glance at Carl slumped dejectedly in his seat. "People don't take their own lives for any such paltry reasons. Ah, yes! Carl has mentioned suicide to me once or twice—says he'll end it all and so put himself out of his suffering. Suffering, did you say, Carl? Do you call that suffering?—this temporary bit of inconvenience? No, Nelson, that's no legitimate excuse for self-destruction. I think our young friend is entirely too sensible for any such rash move—and I've told him as much. Only cowards do away with themselves—and Carl is no coward—No—that's just *talk*—this suicide business—just empty talk——!"

At this point I gave up, mentally. My mission was a failure. This demon meant to continue on his work of torture with unbridled energy. Throughout the interview, Carl and Doris had maintained a disconsolate silence. Fearfully they had watched the doctor pace the floor like a caged animal, now dark and moody, now in almost a frenzy of excitement, delivering himself of his thoughts in short staccato explosions. With the firing of my final shot, I could say no more. At this juncture, the young couple took up the attack in a weak, hesitating fashion. Doris approached her father timidly, and whispered gentle words of remonstrance and appeal. He shook her off savagely and continued his shuffling passage around the room with head sunk and fingers twining and untwining, convulsively, behind his back. Carl, all but overwhelmed by a flood of emotion at the new angle that the situation had taken, attempted a few stammering protestations, but was beaten down gruffly by

the irascible, old doctor. The entire proceedings had so affected the scientist that he exhibited a wild ferocity which I do not believe even his daughter had ever witnessed in him before.

After stamping about furiously for the space of another few minutes, during which he let loose an intermittent flood of ire against the world in general, and against meddlesome upstarts in particular, he turned and stormed abruptly out of the room, leaving the three of us wallowing in an ocean of disconsolation and despair.

WHATEVER might have been the physical privations which Carl had experienced because of the reversed state of his temperature nerves, they were nothing in comparison with the acute mental anguish that gripped him now. He came to see me the very day after my miserable failure of an interview with Dr. Seagrave. The weather had moderated somewhat, so that the young man's bodily discomfiture was not so severe; however, he was in a most dejected state of mind.

"There you have it," he announced mournfully. "The whole matter in a nutshell. Did you hear what the doctor has up his sleeve for me? The very last word in reversals!—*Love!*—*Hate!* short-circuiting the emotions!—crossing the wires——!"

"Poor kid," I responded soothingly, "don't you worry about that. We'll get you out of it somehow."

"Gee, Mr. Nelson," cried Carl, "I could stand all the rest of it—the hot and cold mix-up—the different things he mentioned yesterday—twisted hearing and tasting and seeing—I'd willingly go through with all these and more—but—but—that other one—the love-hate reversal—do you realize how that's going to end up? Here I am, in love with the dearest girl in the world, even though she's the daughter of this monster that's camouflaging as a scientist. I love her madly—and now that's all going to be reversed. He'll twist my feeling around so that I'll hate her, and the more I *love* her the more it will come out as *hate!*—— Just the same as my temperature short-circuit right now—the colder it is all around me, the hotter I feel inside. Could you ever picture such a state of affairs, Mr. Nelson, even in your wildest dreams?"

Carl was the personification of abject misery. The poor chap was certainly in a predicament that was by no means enviable. With a great show of optimism, which was theatrical rather than genuine, I declared emphatically that things would never come to such a fearful state as he now depicted. I assured him that we would find means to counteract the doctor's sinister machinations. I would go to the highest medical authorities—to the highest police authorities. In spite of the doctor's sneering comments about them, and his lofty avowals of immunity from any interference, I would present all the facts of the case and ask for justice. I would bring down such a hail of condemnation, as to compel the scientist to halt his abominable torturings.

These and more I promised the miserable victim, in phrases of greatest assurance and determination. Inwardly I must confess, I entertained no such optimistic ideas. I had seen too much of Dr. Seagrave and his methods to believe that he would be dissuaded from following his entire program by anything short of the most drastic measures imaginable. What those measures were I could not for the life of me foresee. But I knew that if some great pressure could be brought to bear on Dr. Seagrave—if he could be approached from some other angle, perhaps from some personal angle—then possibly there might be some hope for his relinquishing his sinister influence on the boy.

For the next few days I pondered the matter deeply. I could arrive at no satisfactory plan of campaign. To resort to force I knew would be futile. During that period I saw Carl and Doris nearly every day. Their situation was indeed pathetic to see. Carl, miserable again with the coming of a sharp cold snap, and now doubly miserable because of the dread calamity that was hovering in the offing—Doris equally downcast at the awful prospects, but fighting bravely to hide her deep consternation, so as to be able to offer cheer and comfort to her sorely tried lover—both lamentable spectacles indeed. And, judging from all prospects in view, the situation certainly appeared to be hopeless.

"I HAVE it," exclaimed Carl as he stopped his pacing and faced Doris and myself. The three of us were gathered in my living room, where we had been drearily going over the case with no apparent solution anywhere in view. "I have it!" he repeated emphatically, and his eyes flashed determination. "Doris!—I'm going straight to your father—I'm going to tell him everything—of our feelings toward each other—of our plans for the future. I'm going to open his eyes to the real situation. I'm going to make him see that he's wrecking your life—our lives!—I'm going to make him realize what the outcome of his new *love* and *hate* reversal is going to be——!"

Doris closed her eyes and shuddered. "No, Carl—no," she murmured, almost with a moan, "that will get you nowhere, I'm afraid. You know my father's strong attachment for me—it's more like an insane devotion than anything else. I'm all he has in the world. All my life he has guarded me jealously, fearfully—protected me from all harm—kept me strictly to himself. You know with what great difficulty I have kept him from learning the truth about you and me. And if the secret should come out now, at this critical stage, then—God—I don't know what might happen." With a stifled sob, the girl pressed her clenched fist to her forehead and shut her eyes tightly. "He might become so infuriated that he would be apt to do the most dreadful things. Perhaps he would promptly start the new emotional change so as to bring about the reversal from love to hate in you. Perhaps he would even do you some sudden harm, create some different form of reversal, do something to bring about our separation. Perhaps—perhaps——"

Her voice trailed off in a whimper, and now Carl fell to comforting her in turn. It was a pathetic situation, these two youngsters, wandering, like babes in the woods, through a maze of circumstances that would dishearten the stoutest souls.

I was quite agreed with Doris that Carl's plan was not feasible. We must try some more strategic form of action. Again we fell to proposals, counter proposals, this idea, that notion, but going ever in a circle, with no real progress being made. We broke up finally, each more disheartened than before, with a blank wall staring us in the face, and no visible means of scaling it.

TWO days passed, in which I did not see the sorely stricken couple. But I had great reason to think of them almost constantly, not only because of the new

angle to their situation, but because of an old angle that became acute with startling suddenness. For a period of several days the weather had been bitingly cold, with the temperature nearly always below the freezing point. In the main it had been clear, with sharp winds sweeping the city in great gusts. Then the mercury, already in the twenties, took a sharp tumble. For nearly twenty-four hours the thermometer showed about five degrees above zero. And if you are at all acquainted with New York winter weather, you will realize that a low temperature of this kind for any length of time is very nearly unbearable. The city streets were deserted. Unless one had to be about for sheerest necessity he staid indoors, hugging the radiator and praying for a let-up. I thought of poor Carl. If he was out in temperatures such as these, then it was sheer suicide. I had faith in his good judgment to avoid undue exposure. I believed further that Dr. Seagrave and his daughter, each for purely personal and entirely different reasons, could be depended on to keep him out of harm in this severe stretch of low temperature. During our last meeting Carl had told me that he had noticed a certain change in the doctor's attitude toward him—a change that had become evident shortly after the last dramatic interview. It seems that my mention of Carl's possible running away or self-destruction had put the scientist on his guard. He was now considerably more concerned with his young subject's whereabout, between test periods, than he had been throughout the progress of the experiment. Carl informed me that Dr. Seagrave was apparently very much afraid that he would carry out his threat and attempt to do something rash. The lad laughed at the idea. As if he would even think of such a crazy notion with things as they were now! No—he would stick it through to the bitter end—even though it was hard—terribly hard! For there was Doris!—and the hope of ultimate release from her father's spell—then bliss!

I tried hard to believe that Carl would not weaken in his strong determination, but then again I could not be sure. I knew Carl to be headstrong. Under the pressure of strong emotions, with the added stimulus engendered by his dire circumstances, he was very likely to do something rash, something he would not think of doing under conditions that were more nearly normal.

My worst fears appeared to be startlingly justified the following evening. I was peremptorily dislodged from a deep revery by the harsh jangling of the telephone. It certainly must have been my imagination, but there appeared to be something distressingly portentous about its raucous demand for attention.

Dr. Seagrave was on the line, and an intensely excited Dr. Seagrave it was.

"Nelson!—Nelson!—Is it you?" His high pitched voice—almost a screech—made the receiver diaphragm rattle most annoyingly in my ear. His words were hardly intelligible. "He's gone and done it!—just as he said he would!—Who?—Why, Carl, of course!—He's gone!—disappeared—my experiment!—it's ruined— he's deserted me disappeared—suicide!——"

I had heard enough. To try to get details over the phone from Dr. Seagrave in his present state of extreme agitation was an impossible task. I assured the scientist that I would hasten over to his home promptly, struggled into my coat, seized my hat and gloves and dashed out into the street.

It was the sort of night when all self-respecting citizens were safe and warm indoors. A bitterly cold wind swept fiercely from the north. To make any progress one had to fight against it step by step. The piercing cold penetrated in icy stabs to one's very vitals. And to add to the picture, snow had begun to fall during the early evening—a few scattered flakes at the start, but now increasing in volume, with prospects of turning into a real blizzard before long.

I hailed a taxi and was driven to Seagrave's home at a speed as great as was consistent with safety under present traveling conditions. Doris met me first, her face blanched, and a look of extreme fright in her eyes. Her father was nowhere to be seen, but a muffled thumping overhead, as of violent pacing indicated where he was.

"Oh, I'm so afraid, Mr. Nelson!" she gasped. "Carl has been gone since early morning. He slipped out of the house without anyone seeing him go. He's out somewhere in this terrible weather in his—his present condition. Oh, I'm so awfully worried about him—and about father too. He's been carrying on all day—you can hear him up there—— Here he comes now!"

A sound of someone hastily descending the creaky steps, and then Dr. Seagrave burst into the room. His clothing and hair were completely dishevelled. His eyes flashed a fire of insane wildness. The moment he became aware of my presence he pounced upon me eagerly.

"Tell me!—tell me!—where is he? You know but you won't tell me!—you're hiding him!—tell me where he is or I'll—I'll——!"

I broke in to inform the excited man in as calm a tone as I could muster for the occasion, that I was in complete ignorance of Carl's whereabouts—that the doctor's phone call had been the first intimation to me that something was wrong.

"Then it's true!" wailed the excited scientist, wringing his hands in genuine anguish. "Just as I thought—he's gone off to end it all. And I know where he's gone!—Quick, Doris—my coat!—we're going after him. Hurry!—Why are you standing there that way?—Can't you see we mustn't waste any time? We've lost enough already—Hurry, daughter!—my coat!—and yours too—you'll come with us. . . ."

Doris hesitated for a brief moment in speechless astonishment, and then disappeared to comply with her father's urgent command.

The doctor again turned to me, still wringing his hands, while his countenance reflected abject despair.

"He's talked of suicide," he wailed, "but I didn't think he meant it. This morning he failed to report for the nine o'clock observation—the very first time he has ever failed me—and he was nowhere to be seen for the noon test—and no word all day long—and now it's night, and another test period here, but no Carl!—Disappeared—vanished—no trace except this—this note!—I found it upstairs after I called you! My worst fears are justified! Suicide——!"

He pulled a slip of paper from his pocket and, with trembling fingers, passed it to me. I recognized Carl's handwriting. The note was painfully brief:

"Down To the River—Carl"

"That's where he's gone," moaned the doctor. "—over to the little park under the bridge, where we always made our outdoor tests. Gone to destroy himself—him-

self and my experiment—my poor experiment—my poor Carl—and at this stage too!——"

I tried in vain to remonstrate with the excited old man. He would listen to no reason. That was his belief, and he would stick to it until he could be convinced otherwise.

Doris hastened back with the necessary outer garments, and we were off—on what appeared to be a wild goose chase. Out on the storm-swept street we piled into another taxi. So agitated was the doctor that he was positively incoherent in his instructions to the bewildered driver. I directed the man to take us to Fort Washington Park. He eyed us with a look of deep doubt and suspicion, then started off through the terrifying roar of the storm.

Doris, in a dazed whisper, asked her father why that particular spot, of all places, to look for the missing young man.

"Silence, Doris!" commanded Dr. Seagrave sternly. "I have reason to believe he has gone there. The note! —Nelson, where is his note?"—— He fumbled nervously through his pockets. As for myself, I was positive that I didn't have it.

"Oh, well," continued the doctor, "what does it matter —that's where he's gone!—his regular hangout—that's where we'll find him—if he hasn't already—already ——!——"

His voice trailed off into a whimper.

I was genuinely sorry for the sorely afflicted man—almost as sorry as I was for the missing Carl. Personally, I had no faith in Dr. Seagrave's belief that the young man could be found out in this terrific cold. Neither was I at all certain that Carl would so readily take his own life, in spite of my earlier convictions to the contrary. It was my belief now that, if it were to come to a definite show down, Carl would not seek that way out —he had too much to live for. But I was honestly frightened at the possibility that the lad, in that foolhardy fashion of his, was out brooding in this fearful storm, and doing himself a world of injury by exposing himself unduly. I shuddered at the thought of how the boy, in his reversed condition, must be suffering, not cold but heat.

I suggested to the doctor that we had better notify the police, or enlist some sort of aid in order that we could make a systematic hunt for the missing Carl. The old man would not listen to any such idea—he wanted no wasting of time—we must get down to that spot on the river bank without the loss of a single moment, or we would find ourselves too late.

During the short, but nerve-fraying ride, Dr. Seagrave kept up an almost constant wailing and moaning about his experiment—the ingratitude of Carl—the loss of a lifetime of work——

"And at this critical stage, too," he repeated for the tenth time. "When the success or failure of my work hangs in the balance!—Oh, what an ingrate!—to leave me now!—and even if it isn't suicide, it's the same in the end!—That confounded idiot will ruin himself by the exposure. The colder it is, the hotter he feels—the more he exposes himself to the cold!—He'll lose body heat so fast that he'll be the death of himself just the same—by freezing too, even though he may feel as though he's burning up!—Oh the miserable wretch, to play me such a rascally trick at this stage of the game!"

On and on he rambled, while Doris sat muffled up, shivering no less because of the cold than because of the fearful predicament in which her lover might at this very moment be finding himself—if he was really alive. For my own part, I could do nothing but gaze gloomily out upon the dreary aspect of a world of whirling snow and flying shadows that swept past us in our wild ride.

We swung north on Riverside Drive and, careening madly over the slippery pavement, we drew up finally at our destination. A narrow break through the stone wall lining the Drive was the only entrance to the park. We groped along the wooden passageway and down the rough stone steps that led to the first of the series of terraces which terminated at the water's edge. Overhead through the swirling clouds of snow loomed the broad expanse of the George Washington Bridge, lights twinkling through the storm, and a dull murmur of moving traffic coming down to our ears.

Stepping gingerly down the steep walk, slipping, sliding, with an occasional trip and a near-tumble, we made our way painfully down in the direction of the river. The doctor, now driven almost frantic, raised his voice again and again in a hoarse shout. In the general hullabaloo of the elements, his calling was pitifully weak and ineffectual. I also tried shouting Carl's name, but my efforts were equally futile. The wind caught up my words and they were instantly drowned in the overwhelming confusion of wind and noise. Doris clung to my arm, mutely. She had all she could do to maintain her footing on the treacherous path.

So long as we stuck to the walk, we could make some progress, even though slow and halting. But then Dr. Seagrave turned abruptly and began to descend the rock ledge that sloped sharply and irregularly toward the water. We followed as best we could. When we came to a narrow stretch of horizontal rock, the doctor stopped and set up another series of shouts that were promptly lost in the whirl of the storm.

"We'll have to separate," I shouted to make myself heard. "Here, Dr. Seagrave!—you go that way—north along the water!—Doris!—with your father!—I'll go —south—alone——"

I don't know if they understood my words, but my gestures made it plain. The doctor nodded eagerly, then, holding Doris by the hand, for mutual support, he clambered down the slippery rock with the girl at his heels. I turned about and fought my way against the blistering wind and snow in the opposite direction.

MY first glimpse of the river through the storm was one that was equally frightening and awe-inspiring. The water was a churning chaos of moving ice. Ghostly white masses, large and small, swirled and crunched together in the swift dark current. The river seemed to be veritably choked with these floating blocks. Only here and there near the shore could be seen open dark patches, that appeared to be clear water. It occurred to me in a vague sort of way, as I battered the fury of the wind, that it had been many a winter since I had seen ice on the Hudson. It was only then that I realized, what a severe stretch of cold weather we had been experiencing for the last few weeks.

Again I shouted my young friend's name to the flying snow and to the dull light-speckled mass of the bridge overhead. The wind and roar seemed to be subsiding somewhat, so that my call appeared to carry a greater distance. Even then it was a miserably feeble effort. The whole thing struck me as being hopeless and for-

lorn. Hunting a missing person with such slim clues, and under such adverse conditions seemed to me very closely akin to searching for the proverbial needle in the haystack. But there was that one slim chance that Carl might be somewhere about, and I was loath to give up the hunt on my own initiative. Off to the north I could make out the faint shouting of the doctor, and I could imagine him stumbling along the river bank, with Doris hovering behind him, calling hoarsely the name of his precious young assistant who had left him so abruptly at this crucial period of his experiment.

Although the wind and noise had died down somewhat, the blinding snow came down with fierce fury, and the bitter cold penetrated relentlessly. Even though I was bundled up to my ears and despite my intense exertion in climbing, sliding, half running, I was chilled to the bone. My toes were numb, my ears and the exposed portions of my face were getting the real brunt of the elements, and were being sorely punished. And as for my hands!—I swore softly to myself at my absent-mindedness in leaving my heavy fur-lined gloves at the doctor's home in the great haste of our departure.

Dr. Seagrave's shouting became dimmer and dimmer as the distance between us widened, then was lost. I struggled on across the irregular boulders and icy slopes of rock that formed the shore line of the park.

Then suddenly there came a new shout—an exultant outcry—very near and on my left. I wheeled instantly to face——

Carl himself!!!

He stood there on the slanting rock not a dozen feet from my position at the water's edge. And what an absurd figure he was—stripped to the waist, attired in a flimsy pair of gymnasium shorts.

I scrambled breathlessly up the icy incline to him and seized him by the bare shoulders as though I were afraid he would escape me.

"Carl!—it's you!" I called hoarsely. "Where have you been?—We've been hunting all over for you!—the doctor, Doris and I——" I felt the abnormal glow of his body as I held him, and observed in the semi-darkness that familiar flush that incongruously overheated appearance that he made.

"I knew you were all here," he panted. "I came here to look for you. Where's—where's Doris?—Where's Dr. Seagrave?——"

"Up there along the shore," I retorted, pointing. "But how?—where?——"

"Never mind that now!" he almost bellowed, and grasped my arm. "Come! We've got to find them!—to tell them I'm all right!"

We scrambled along on the precarious ledge of slippery and jagged rocks in the direction in which Dr. Seagrave and his daughter had disappeared. Running, climbing, sliding, we made our way northward along the river bank. Carl, in his abbreviated attire, was nimble, I impeded by the cumbersome folds of my heavy coat, was considerably slower.

"I got wind that you were all down here." he gasped as we continued together, "never mind how I learned it—and so I hurried out to get you—My clothes?—they're up there—on a bench somewhere—don't need them—feel a lot better without them——" He turned to give me a knowing smile. I perceived that his face was the color of a beet, as was his entire body as well. He was literally bathed in perspiration.

Suddenly, from just ahead of us there came a hoarse cry, and mingling with it a high pitched shriek. Then another shriek, long drawn out, like a mournful wail, and then—a splash!—again a splash!——

Both Carl and I stopped dead in our tracks. My blood ran cold. His blood, because of his reversed condition must have run *hot*. Almost in unison we plunged forward across the ice-encrushed boulders into the gloom ahead. More splashing and mingled cries. Then we burst upon the scene. In a dark area of open water just off the shore were two darker patches struggling helplessly. Doris and her father!!—both in the frigid river, surrounded by threatening fragments of ice, being swept out from shore by the swift current!

I could see the situation in a few fleet seconds—Doris had probably lost her footing on the icy rocks—had fallen in—the doctor, in his flustered attempt at rescue had slipped and followed her into the numbing water——

But while I was methodically summing up the situation, Carl was acting. With a leap he was down at the water and clambering over the partly submerged rocks and the cakes of ice that had become wedged in among them. Out into the water he splashed, up to his waist, shoulders—and then, with powerful strokes he worked his way to where the helpless victims were struggling. I noted with dismay that now only one form was struggling—the other floated motionless. Pushing aside the cakes of ice that impeded his progress, his red face bobbing resolutely, he came up to the benumbed and unconscious Doris. It was the work of a few breathless moments to drag the still form back to where I was standing as though paralyzed. Whipped suddenly into action, I stooped to haul the limp body from the water and out on the rock ledge. Then back again the intrepid young man plunged, to where the dark form of Dr. Seagrave was floating, splashing feebly, and barely visible now through the blinding whirl of the snowstorm. Presently he was back again and I found myself tugging at the dripping icy form of the semi-conscious scientist, and then helping Carl back on the rocks again.

What a spectacle! Two pitifully drenched, ice-encrusted, half frozen human beings lying on the rocks, and standing over them this figure of their rescuer, dressed in ridiculously meagre trunks, his hair and body dripping, his entire skin one blazing mass of red, the color of a boiled lobster. Looking, at Carl one could almost *see* the unnatural glow of heat exuding from his body—one could almost hear the flying snowflakes sizzle as they landed on his bare shoulders and chest.

If the situation had not been so tragic, I would have been impelled to a burst of hearty laughter.

"BUT what I cannot see, Carl," I queried, "is how you knew that we were down there by the river looking for you—and how you managed to make your appearance just at the right moment."

The young man glanced up at me with a smile, but continued tenderly stroking the head of the girl on the hospital cot before him. Doris, still very much shaken by the dreadful experience of the previous day, turned a pair of wan but questioning eyes up toward her Carl.

"Simple enough," he laughed. "It was that note."

The girl looked puzzled.

"Oh, you didn't see it eh?" Carl asked. "Well, maybe it's all for the best. Because, if you had seen it, you

(*Continued on page 267*)

The Metal Doom

By David H. Keller, M.D.

Author of "The Revolt of the Pedestrians," "The Eternal Professors," etc.

Foreword!

IN "The Metal Doom" the author is attempting something different. Here is a game that anyone can play at. All that is needed is imagination. We start with a certain situation, the sudden and complete destruction of all the metal in the world. What would happen?

And it is our belief that from the very beginning anything and everything in this narrative COULD HAPPEN. *True, we start with one seeming* IMPOSSIBILITY, *the destruction of metals, but from then on we enter not into the realm of fiction, but of fact.*

The scientific part of the narrative naturally assumes two trends; one narrates the natural events which follow such a disaster and the second mankind's reaction to those events. As a psychiatrist, the author is naturally more interested in man's reactions. He feels that the reaction is really more important than the cause of the reaction. The far-reaching changes in society, the change in ethics, laws, religions, governments seem of vital importance. And back of all the narrative is the thought that the entire tale is possible, once the premise is taken for granted.

Illustration by MOREY

What Went Before:

CIVILIZATION first noticed the menace by their watches. Not only old watches, but even the new watches in the well-ordered safes of the best jewelry shops ceased to function and showed definite signs of decay by rust. Then all metals throughout the world gave way—elevators, subways, metal framework of apartment houses, of business skyscrapers—everything of metal. All means of transportation stopped. Those far-sighted individuals who started out of the cities into the country, who had not entirely forgotten the art of living as it was known before they acquired the science of living in the highly mechanized era of the late twentieth century, survived somehow.

Paul Hubler and his wife, Ruth, and their baby, Angelica, are among the first to move and find themselves a log cabin in the woods. John Stafford, on whose property the Hublers have settled, comes to visit them after several weeks and proposes that the Hublers join his colony, of which he is the leader. They ask to be allowed to remain where they are for a while, but when definite danger threatened—not only them, but the entire Stafford colony—the Hublers moved over to join the rest of the group, and they succeeded in thwarting the invasion of a gang of escaped convicts who were bent on murder.

Then, soon afterwards, Andrew Mackson, the leader of a similar colony in Vermont, visits them, in an effort to get the Staffordites to join the Vermont colony. Instead, however, Mackson goes on a tour across country to get the leaders of the various communities which Stafford and Mackson both believe to have been formed in various parts of the country, to sign a document, what might later turn out to be of similar importance to the "Declaration of Independence," this time heralding in a new era to be known as the New Stone Age. A special set of laws are drawn up and plans for a fort, which they now feel is necessary, are being considered.

CHAPTER I

Mackson Returns

ONCE the decision was made to build Fort Telephone, there was no delay. The entire resources of the Stafford Colony were directed toward the completion of that task. It was not a small one by any means.

Fortunately the winter was a severe one. The snow remained thick on the ground till nearly the end of March. Stone boats were made and house after house was demolished and carted piecemeal to the site of the fort. Stone fences were torn down. Whenever possible telephone poles were rooted out of the earth and snagged to their locations. When spring came much of the building material was in place ready to begin operations. At the best it was a heart-breaking task, digging ditches, moving stones, lifting the poles in place, tamping the dirt around them.

The men from the Mason Colony came to help and thus added thirty-five men to the working force. June found the place capable of standing an assault if not an actual siege. Part of the men were detailed for agriculture, the rest kept on working; at last the women stopped their housekeeping and helped carry stones and pull on the ropes. Nothing happened. At times many of the men thought that nothing would happen, that it was all a weird nightmare and that the fort was a useless anachronism.

Now it could be seen that they were not birds, but **men in gliding machines.** *And from the gliders* **dropped death!**

But at last it was finished. The little huts inside the enclosure were capable of housing a hundred families, three hundred people. There was a great deal to be done as far as the gathering of stores were concerned but the labor of building was at an end. Christmas day found a tired but contented band of people.

On Christmas day three bearded strangers rode up to the Stafford House. Mackson of Vermont and two of his guard. The others had died on the trip. It was a return from a great adventure.

Stafford realized the importance of whatever message Mackson had for them. He knew that it might be hopeful or hopeless. He did not want to discourage the rank and file of his followers and so, uncertain and cautious, he called in six of the leaders, Hubler, the man of imagination; Peterson, the architect; Johnson the ranking officer of the new army; Van Recklin, the scientist; Mason, of the Mason Colony; Wagner, the farmer, and lastly himself. That made eight with Mackson.

Mackson needed no introduction. He made no elaborate peroration; he simply placed on the table a paper.

"There it is, gentlemen. That is our new constitution. I have been gone sixteen months. I went to the Pacific by the Santa Fé Route and returned over the Lincoln Highway. Of course there is a lot of the United States I never saw, but if the rest of it is like what I did see, I am glad I did not see it. I have the signatures of over two hundred communities like yours and like mine in Vermont. I suppose there are three hundred similar adventures going on in the old U. S. A. Every community I visited had the same ideas and the same ideal as we have. They were all glad to see me. They welcomed the idea of a new union. They were all composed of thinking, hard working idealists, who had banded together for mutual help. If we could get the people of these colonies to all live in one state, we could do something. As it is they are scattered over too much territory."

"Do you mean to tell me," asked Stafford, "that in your opinion there are only about three hundred such colonies in all the United States, and each colony about like ours in size?"

"That is my estimate."

"But that is only about a hundred thousand people!"

"I suppose so."

"But—where are . . .? Why, man! That is impossible! Where are the people? We used to have a hundred and twenty-five million in the States. What—what happened to them?"

"It is a mess," answered Mackson.

"Go and tell us," urged Hubler, kindly. "I think I know; I think we all know. I have stayed awake at night trying to—well, trying to imagine what had happened. Go on and tell us."

"All right. Here goes. In the first place we saw most of the large cities. The main highways passed through most of them. The cities are gone, especially the business sections. You see the buildings were simply built around structural iron and when that rotted the building simply collapsed and the streets were not wide enough to hold the débris, so they just filled up, fifty to seventy-five feet, of every possible kind of wealth—just junk. In the residential sections it was a little better because the buildings were not so high and there was more wood used. I do not know how many people were killed in the city. Perhaps many million left in time but there must have been as many million who thought they would stick it out, and died in the final collapse.

"In the country things were a little better. The people were nearer the sources of food, the country people more accustomed to making use of their hands. If they were far enough away from the city, the country people did not do so badly, for a while. But those who lived near the large cities were simply over-run. At first the urbanites were willing to pay money, but very soon the money gave out; the food was used up and then began a fight for life between the people in the country and the visitors from the cities. It was a fight for life. Every farmhouse was a little fort, every farm a battle ground. When the city people won, they wasted the food through ignorance. When the farmers won, they simply had to start fighting all over again. I talked to the heads of the various colonies who signed our constitution, and all they could tell me of those first months was that it was kill, KILL, KILL!! or be killed. It did not last long. The people from the city had no stamina, their women were weak, their children puny. They died like flies. The main highways are marked, not by signboards but by bodies and bones. Disease came, and at last winter. Only the strong survived, and they were only of two groups. One class is represented by the various colonies, the other class are escaped criminals, former gangsters."

"We know about that last kind," remarked Stafford.

"I suppose so. You can tell me about it later. Now for the sections. I did not see much of it but they tell me that the white population in the real Southern States is wiped out. For generations they held the negro down with firearms. When it came to the point where clubs and stones were the only weapon, the negro rose and that was the end of white supremacy. Of course the colored man has gone back to barbarism, and South of the Mason and Dixons Line is just another Africa.

"West of the Mississippi it is different. Texas, New Mexico and Arizona are fighting for their lives against the waves of Mexicans and Indians from over the border. They are having real war down there. Every Texan I met said the Lone Star was going to keep on shining. They are even talking about forming an army and going down to Mexico and settling the thing once and for all. They were interested in our proposition but so busy with their own troubles that they did not have much time to give it. They signed on the dotted line, but I am not sure how much it will mean.

"California is very much like New York. They still have a lot of climate but had to admit that the tourist business was at a standstill. They are trying to form a republic west of the Rockies and wanted to be friendly with us, but at the same time they felt rather isolated. You understand how they feel after you have made the journey out there on horseback."

"So you think the criminal element is a real menace?" asked Hubler.

"I do. Everywhere we went the serious thinkers were worried about it. You see the escaped criminal and the gangster were used to fighting for what they thought belonged to them. They were used to killing, to running in herds and packs and gangs. It was just second nature to them. The complete overthrow of all the organized restraint gave them an unusual sense of freedom. For the first time the policeman was not standing on the corner. They have all organized. In some districts

their bands number hundreds. Of course they fight among themselves but mainly they are killing the decent, isolated country people."

"How about the change in the country, the fields and the animals?" asked farmer Wagner.

"There are a lot of wild dogs. They are gathering in packs. Out west the lions are growing in numbers and courage. We heard a lot about escapes from the Zoological Gardens. I talked to one man who said he believed there were over two hundred lions and tigers in the United States. We saw a herd of elephants, and a lot of other wild animals escaped from various circuses. Of course most of them are shy, but in time the flesh eaters will start killing.

"As far as the land is concerned, it is going back to nature."

"Looks rather hopeless," commented Van Recklin, scientist.

CHAPTER II

Stafford Goes Away

THE tired man from Vermont was put to bed. The leaders talked for a while longer and then all left except Stafford and Hubler. Paul had been asked to stay.

"It looks as though civilization had a grand smash, Paul," said Stafford. "Must have been rotten at the core to go to pieces so quickly."

"Something was wrong," agreed Hubler. "Looks as though the individual became too highly specialized, learned to do one thing and became incapable of doing anything else. Cannot live that way in the Stone Age. A man has to be Jack-of-all-trades to survive."

"Of course the cities were doomed."

"Certainly; but if it had not been the Metal Doom, it would have been something else. Conditions were becoming too congested, too artificial; things had to break; something, somehow—what I want to say is that in some way the city, as a place of abode was on the way to destruction anyway."

"Have you ever wanted to go back and see what happened to it, Hubler?"

"Sometimes. But that is just curiosity. I do not think I was ever really happy there; and I was born there. I would like to go back and live in the old farm house where Ruth and I were when you first met us. That was a sweet place to live."

"Let me ask you a question. How would you like to take charge of this place? Be the leader of Fort Telephone?"

Hubler laughed as he replied. "What for? With you here? All the boys like you."

"I think I am going away"

"What for?"

"I don't know. Just going. I guess I am fed up on the life here. It is different with you You have the wife and little girl. I am just an old bachelor. We have the fort built now, and all you have to do is to fill the store houses with supplies, and keep things going. I am going to take my favorite horse, and I am going to go out into the world and see what it looks like. Two years now and I have not been more than five miles away from the house."

"You ask Mackson to be the head."

"No. He is popular with his men but he is not the right man for the commander of the Fort if anything happens. He could not anticipate trouble. Now you have imagination."

"You have said that before. Well, I won't argue with you. When are you leaving?"

"At daybreak. You tell the boys and say Good-bye to Mackson. Tell him that if things get too hot up in Vermont then he and his company will always be welcomed here."

Hubler looked at Stafford anxiously.

"You will take care of yourself and come back safe?"

"Sure. Don't you worry about that. Comes spring and I'll be here to look after the young stock."

"Take some of the men with you, won't you?"

"No. I want to have a good time. I don't want to bother with any men."

Back to his bedroom, Paul woke Ruth to tell her the news.

"Stafford is leaving the colony."

"I expected it."

"Why? Did he say anthing to you?"

"No. But he has been restless. He has finished the fort and there isn't anything big here to do, so he is restless."

"I bet he has something up his sleeve."

"I suppose so. Stop talking so loud. You'll wake the baby."

At daybreak Stafford had an early breakfast, walked over to the stables, saddled his favorite horse, carefully tied on a stone tipped lance, a battle ax, small tomahawk and his bow and arrow, and then with a warm handshake for all the stable men, rode off into the early sunrise.

There was a little snow on the ground, and the air was just cold enough to stimulate. The horse felt good, the rider felt good; everything seemed all right.

"I am free from care," Stafford acknowledged. "For an old bachelor I was growing too large a family It was nerve racking; so now the family can shift for themselves as best they can while I go off on adventure bound. Shall it be the city or a wilder country? East or West? North or South? I know what I will do. The Mason colony have a flat boat; I will have them take me across the Hudson, and then I will go down the Delaware River Valley to the Water Gap. That was a favorite drive of mine in the good old automobile days. I always thought that Mount Minsi would be a fine place to build a fort on. There are a lot of good cement roads over there and I guess if we go slow and are careful, the old horse won't go lame. I may locate a few new colonies down that way."

He spent the first night at the Mason Colony. As part owners of Fort Telephone they knew and respected Stafford. But they advised him not to cross the river.

"There is a lot of wild country over there and it is growing wilder all the time. Not many people but lots of dogs and we hear some real lions."

"I always wanted to kill a lion," said Stafford.

Not being able to change his mind, they took him across the river. A week later he had circled around Port Jervis. Two days later he was at Milford. From there down to Bushkill, Shawnee and the Water Gap was a short ride.

The trip had been singularly devoid of excitement. The country was peculiary depopulated. There were any number of stone houses, and he was always able to

make himself fairly comfortable at night. In most of the barns there was hay for his horse, but the country people had all left. At Milford he found a partial explanation. There was a fort. Singularly it was very much like Fort Telephone, and around that fort over two hundred families were spending the winter. He had a long talk with the leader and made arrangements for mutual help in time of need.

They advised him not to try to go further south.

"It is a long trip to Easton," they said, "and there is nothing to see. There is another colony and fort in Cherry Valley but the Stroudsburgs are empty."

"Anybody living at the Gap?"

"Don't think so."

"I am going anyway."

One of the older men took him to one side, and whispered. "Don't want to scare you, but there are some tigers and lions down that way."

"You don't say so? Real ones?"

The old man shook his head in assent.

"There's been horses and cows killed by them."

So that was just one more reason for Stafford going on. He planned it all out. If he could he would use his bow and arrow; or, if the horse would stand for it, he would lasso the brute. If he had to he would tie the horse and go on foot and use the lance. He still had left the battle ax, tomahawk, and his flint hunting knife.

"Have to be careful not to spoil the hide," he said to himself, with a grin.

At Shawnee he took a detour leading up the side of the mountain. It was a nice dirt road. He was partly influenced by the sight of smoke curling up through the frosty air. People had a fire there and he wanted to meet them. At the top of the road he suddenly saw what he was looking for.

Not a house, nor people but a tiger.

It was in the middle of a little meadow surrounded on three sides by the forest and on the south side by the road. The tiger was leisurely eating his kill, a dead calf. If he saw the man and horse he paid no attention to them but kept on eating. The horse trembled and tried to turn around. Stafford tied him to a tree, slung his quiver of arrows on his back, took a lance and the bow and ax in his hand and jumped over the fence. He was about fifty yards from the tiger. His striped tawny hide made a beautiful mark against the snow of the meadow. Stafford took his heaviest hunting arrow, carefully estimated the distance and let fly. It struck the beast's neck, back of the ear and passed completely through.

The tiger cried and charged. Stafford had time for one more arrow and then seized his lance. Fifteen feet from him the tiger jumped. In the air he was impaled on the stone point of the lance. It broke under his weight, but he was dead when he touched the ground. Stafford wiped his forehead He was surprised to find that he was sweating freely. A woman came running out of the forest and across the meadow.

"You have killed my tiger," she cried, angrily.

CHAPTER III

A Lady and a Tiger

STAFFORD looked at the dead tiger and then at the angry woman. He never said a word in reply. She came closer, and the man saw that the right hand held a small stone hammer, held by the handle and ready to throw. She repeated her accusation.

"You have killed my tiger!"

"Your tiger?" he asked in astonishment.

"Certainly! And what business have you anyway up here? Trespassing on our land and killing our pets. I have half a mind to kill you, you big brute, to go and kill a poor tiger who never hurt anybody."

"But it was eating that calf, Madam."

"It had to eat something, and anyway, it was our calf, and none of your business. What are you going to do about it?"

Stafford took out his hunting knife.

"I am going to skin it for you," he said. "Seems strange to me, what you say, but if it was your tiger, and I do not for the life of me see what you were doing with a tiger, but if it was your tiger, it is a dead tiger now and the only good you could have out of it is the skin, so I'll skin it for you and take it to your house, if you'll let me"

"What did you kill it for?"

"Wanted to. Always wanted to kill a lion or a tiger. Heard there were wild ones down here, and thought I might have a chance."

Skinning a tiger under the best of conditions is not a small job and it is a larger one when a flint knife was the only one available. The woman sat on a large stone and silently watched the process. At last Stafford finished, brought his lasso and tied the skin in a compact bundle, and fastened the other end to the horn of his saddle.

"Now if you tell me where you live, Madam," he said, "I will drag this skin to your front door and drop it there. I guess you know how to peg it out and salt it."

"Don't call me Madam! Call me Doctor."

"You mean that you are a physician?"

"Certainly. Don't I look like a physician?"

"No. Most of the women physicians I have seen look a little old and worn out, while you look—well, just a little young."

"Perhaps that is because I have not been working since the crash came. Since you have killed my tiger, I might as well let you bring the skin home. It is not far to the house, so I will walk on ahead of you."

"I'll walk with you, Doctor, if you are willing."

Fifteen minutes later they came to an old brick schoolhouse. Two other women were standing at the door.

"Where have you been, Dotty?" asked one of them.

"Out feeding my tiger and this man went and killed it, so I invited him back for dinner and this afternoon he is going to show me how to start tanning the skin."

"Hmmmm. Well, why not introduce everybody?"

"My name is Stafford," said the man.

"And I am Doctor Perno, and these ladies are Doctor Brown and Doctor Hoffard."

"Pleased to meet you, ladies. Seem to be a lot of Doctors here."

"Yes. You see we lived here in the summer, so when the change came we thought it best to stay here. There are about ten other women around here Quite a little colony."

"And no men?"

"Of course not. What would we want men for?"

"I see. I thought a man might be handy now and then, but evidently one is not needed here. So now I will just say good-bye and be on my way."

"We turned the garage into a barn," answered Dr. Perno, and you will find room for your horse there and hay for him, and I guess the girls have something to eat and so you had better stay and show me about that skin."

In a short time the three Doctors and Stafford were seated at the table. Stafford looked around.

"You ladies seem to be real comfortable here."

"Yes," replied Doctor Brown, "and we were doing well. Two cows and a few goats, and—then the tiger came, and there is nothing left. Took our last calf last night."

"And Dotty was so mad she took her tomahawk and said she was going to find that tiger and settle with him."

Stafford looked at Dr. Perno.

"Yes, Dr. Brown. The business of having tigers for pets is a costly one at times. This one cost me my best lance. Perhaps it was a good thing for the tiger I came along when I did. If Dr. Perno had found that cat first she would have been right brutal to it. As it was, all she was brutal to was the insolent stranger who killed her poor pet."

"Have some more beans," said the Doctor in question.

"And you ladies have lived here all these months and not had any trouble?" asked the man.

"The sun did not always shine," whispered Dr. Brown.

"We have had our ups and downs," added Dr. Hofard.

"And now and then have our pets killed," purred Dr. Perno.

"And there are thirteen of you. All physicians?"

"Of course not. School teachers, and nurses, and even a retired lawyer."

"Well, well! Thirteen. That is an unlucky number. I feel that something is going to happen to one of you."

"Oh! Yeas!" replied Dr. Perno "Like having our tiger killed?"

"Something like that," laughed the man. "But seriously, ladies, you ought to have protection."

"Nonsense! No one ever comes here."

And at that the door was flung open and in rushed a number of women. There were excited questions and answers. Everybody talked at once. Finally the story came out. The lookout (for it seems that the women really took turns watching from a high hill) had seen a small group of men on horseback come up the road. Before she could give warning, the first house of the feminine colony had been captured, the two women living there killed and the house set afire.

"It is the old story," said Stafford, quietly. "You were just lucky not to have it happen before. Now you women stay here and shut the windows and doors and keep quiet. If the men come, you fight. I am going to leave you."

Dr. Perno went up to him, and put her hand on his shoulder.

"Where are you going?" she asked.

"Going to kill some more tigers," he said smiling.

"I am going with you," she replied.

He shook his head.

"Not this time," he whispered. "This business of vermin hunting is not a nice one for ladies to engage in."

"You will come back?"

"Sure."

CHAPTER IV

Stafford Comes Back

STAFFORD looked a little old as he walked out to the garage and saddled his horse; things had taken a rather unexpected turn.

He knew that he had to go and kill those men. He felt fairly confident he could do so. He did not feel that he was a hero; he did not even feel afraid; just rather irritated at having to do something like that just at this particular time.

At a walk he rode the horse down the road. Soon he heard shouts and talking. He turned into the woods and hid behind a large rock. Ten men passed him, and their talk betrayed them. They were hunting women and the two they had met were too old. Stafford arranged his quiver so the arrows were easily grasped, and had his horse walk out on the road. He was now about seventy feet in back of his prey.

He stopped his horse and after careful aim sped an arrow. Almost before it had reached its mark another was in the air, and another. Three men tumbled to the ground. The other seven turned their horses, saw only one man and charged. Two more dropped and then Stafford charged to meet them, lance at point. He ran through a man, dodged the blows of the others and galloped up the road. Sixty yards up he turned his horse and again started to shoot. Two men were left and they charged. At least they were not cowards. One had his skull crushed, the other, as he galloped by struck Stafford's left arm and broke the bone. Stafford, holding his ax in his right hand and guiding his horse with his knees, pursued him. They met in front of the old school house. The bandit was armed with a club, and they fought it out, with the women watching from the windows. Stafford could not guard his left side and there the club fell crushing him to the ground. The bandit jumped off his horse, ran over to where the man lay, senseless on the snow, and raising his club, prepared to give the death blow. The club dropped from his hands, he looked puzzled, and slowly sunk to the ground, his skull almost cut in half.

Stafford kept on sleeping. At last he woke. He looked around him. Everything looked strange. He was puzzled, could not remember what had happened. He shut his eyes. Again he opened them. A woman was sitting by his bed. He remembered now; at least a part of it.

"I had a dream," he said. I thought I was home.

"You are, dear," said the woman, kissing him.

"So that is the way of it," he said rather contentedly. "Just what happened? The last I remembered I was in a bad way. I think I must have made a failure of my last kill."

Dr. Brown came in just in time to hear that question and she answered it.

"It was like this. Dotty had a ringside seat, and when the umpire started to count you out she became restless and got into the fight. In other words, she killed another tiger."

"So that is the way it was?" said the man, looking at the woman. She started to blush.

"It wasn't anything. You killed a tiger for me and I killed one for you," she said.

"I see. Did you get the horses?"

"Yes. We have all ten in the pasture, and three of the men in the hospital."

"You mean you didn't—. I mean you are taking care of them?"

"Certainly," answered Dr. Brown. "They were rather badly hurt, but it was wonderful surgery. You killed the other seven, you and Dottie. What's the matter? You look as though you weren't pleased."

"Up our way," said Stafford, "we don't take prisoners."

"You don't mean that you kill them?"

"I think you heard me the first time, Dr. Brown."

The Doctor was puzzled. She went and talked it over with the other physicians. They came *en masse* and asked Stafford to explain his statement to them. He seemed tired and talked slowly, as though he were explaining simple facts to a group of children.

"I do not believe you women understand just what has happened in the world. You came up here, and it was a rather isolated and sheltered position and you were not where you could see the changes that took place in the social and judicial thinking of society.

"Life used to be considered a very wonderful thing, and everything was done to prolong every life. It did not make any difference whether the life was of any value or not or whether the person deserved to live. The idiot, the epileptic, the insane, the degenerate and the criminal were all taken care of. In time of war prisoners were taken, and, even though they were not taken care of very well, at least, their lives were spared. And it was only occasionally that a man was so bad that he was punished for his crimes by the taking of his life; in a large majority of crimes the criminal was simply shut up and the good people of the state were made to support him.

"It is all different now. The few groups of decent people who have managed to exist so far have all they can do to keep going All their energies have to be spent in self-preservation. The hopelessly insane, the uneductable idiot, the hardened criminal have no possible place in the best communities of the new Stone Age.

"I am the leader of a colony of about two hundred persons. We are trying to the best of our ability to survive. But that undertaking means that we can raise only normal children, cannot care for hopeless insanity, and, under no circumstances, can we, after a battle, expend our energy and provisions in the care of prisoners, wounded or not."

"Let me ask you a question," said Dr. Brown. "You are attacked by a band of escaped convicts. You win the fight. Many of your enemy are badly wounded. Do you mean to say that you kill them?"

"Yes."

"And if you had a little feeble minded child born in the colony, you would kill it?"

"Fortunately it has not happened yet, but the colony could not agree to care for that child, as a member of the colony."

The lawyer of the group interrupted, "You have thrown away one of the greatest ethical possessions of humanity, the care of the unfortunate by the more fortunate, the most wonderful lesson of Christianity to mankind."

Stafford looked a little more tired as he replied:

"We haven't thrown away anything, Madam. But certain conditions were forced on us by the Metal Doom, and we have only done what we had to do."

"You are terribly brutal. I am glad you are not my husband. I wouldn't marry you if you were the last man on the earth."

"I am sure of that, Joan," said Dr. Perno.

Four weeks later Stafford headed a little band northward from Shawnee. Through the Delaware River Valley they went northward, reversing the journey he had made when he went tiger hunting. At last they came to the Stafford Colony and Fort Telephone.

That night he held a meeting of the associate leaders of the colony. One of the men questioned the wisdom of his step.

"Looks rather foolish to me, Stafford. Might be all right to bring one woman here. We would have given you three rousing cheers, but when we saw you coming up the road, followed by eleven women, we were not sure that you had remained sane. What in the world can we do with eleven women?"

"It was this way, boys," the leader replied. "These eleven women were all highly educated, and between them just the finest lot of the old maids you ever met, and not so old either. I happened to find them and just in time. If I had come a day or so later, they would have all been killed. I became acquainted with them and I thought they would be of great help to our colony. You see, a lot of our boys are not married, nice enough boys, but never married when they could and then, when the crash came, it was too late. So, I thought it would be a good thing to bring back some wives for them—and I did."

"But those women won't marry our boys. They are Doctors and lawyers and teachers. They won't marry our cowboys and stable men."

"Won't they? You just wait and see. It is my opinion that everyone of them will be married in a month or two. They just never married before, because men were too common, but now—it's different now."

"Let me ask you a question, Stafford," said Hubler. "Are you going to marry one of them?"

"I never thought of that, Paul," said Stafford with a laugh. "I have been so busy bringing that lot of women through danger safely that I never did think of marrying one of them. Now you met them all at supper, Paul. Which one do you think I ought to wed?"

"That lawyer would be the best one."

"O. K. with me," said Stafford.

CHAPTER V

The Eastern Migration

THE next day Stafford made an inspection of the Colony with Paul Hubler. He personally saw and spoke to all the people who lived within the shadow and protection of Fort Telephone. He saw all his favorite horses and all the new born calves and colts. Everything was quiet and peaceful.

"Not a cloud in the sky," he commented to Hubler. "It all looks very much like the old days. Not as busy and noisy as it was then, but on the surface, things are very much as they used to be. At times I think that I was over excited when I allowed you to persuade me into building Fort Telephone. I do not believe we shall ever need it."

"At least, I have gone ahead with the storing of neces-

sities in it," replied Hubler. "All the time you were gone we filled the houses with grain and every possible thing we could need in case of a siege. I had the men make two trips to New York City, and while the plundering of that place is very difficult, we brought back a lot of stuff. You would be surprised to see our card index. And we have all the huts whitewashed and furnished. If we had to, we could put four hundred people inside the fort, shut the gates and start providing for them, and I think we have provisions for several months."

"I am not sure that we shall ever have to use the place, Paul. I have praised your imagination, but at times I have felt you had a little too much. Now, in regard to your idea of my marrying that lawyer; that was just imagination run riot."

"Have you asked her to marry you?"

"No. Did not have to. She told me that if I were the last man—"

He never finished the sentence. A horseman galloped up.

"You men are wanted at the house right away."

"Anything wrong?"

"Must be. A stranger was brought in by the sentinel, and then they came running down to the barn and told me to get the Boss back as soon as I could. Had a hard time finding you."

Later on the two men walked into the office of the Colony. A stranger stood up as they entered and introduced himself.

"I am Webster, from Maine," he said simply. "Things are going wrong up there and they sent me down to give the warning."

"Sit down and rest," urged Stafford. "You look tired."

"I am. Been riding hard."

"So, things are bad up in Maine?"

"Worse than bad. They just about wiped us out. We had five rather flourishing groups up there, doing fine, and then they came."

"Who are they?" asked Hubler.

"The Tartars."

"Not from Asia?" asked the astonished Stafford.

"I guess so. Of course, I never was over there and we cannot talk their language,and, even if we could, we have been fighting so hard that there was no time for conversation, but they look like the description in the histories, and they act like real Huns of some kind."

"Where did they come from?" queried Hubler.

"Must have come from Europe. First we knew they were in Maine. We had a colony of fishermen right on the coast and those of the colony who escaped said they just woke up one morning and there they were, in what seemed like hundreds of sailing vessels. They just landed and that was the end of that colony and then they spread. We had a little warning and we started to fight, but it was a hopeless battle from the first. They nearly wiped that first colony out; only a few escaped. After that they just spread out and mopped up the state of Maine."

"Couldn't you do anything? Didn't you have arrows and spears, and stone clubs? Did you know how to fight?" asked Stafford.

"Of course. We had made weapons, and practiced in their use, but we were like children against those men. They had done nothing but fight with hand weapons for centuries, and they were as much at home on horses as they would be on a chair. Besides, every fight was an unequal one. A colony or group of about one hundred fighting men against several thousand Asiatics. It was just slaughter after slaughter. No prisoners, no hope."

"And they are coming this way?"

"Looks like it. I have tried to spread the news. Another courier went up toward Vermont and Canada. We thought that we might make an united stand on this side of the Hudson. The battle will have to be fought in the open and to the death. When we are through, either we will control the East or they will. If they win, it will mean more boats and more Tartars and soon the entire western continent will be Asiatic."

"Have you any idea as to how many men we shall have in that army?"

"Not exactly."

"You are not even sure that the colonies will realize the danger and respond?"

"No. But we heard rumors that a number of them had signed some kind of a compact to assist against a mutual enemy."

"They did. A Vermonter took the paper to the Pacific Coast and back again; but only a limited number of those colonies could possibly respond in time to help stop the enemy east of the Hudson. Where do you think we ought to form a line?"

"Right here. On my way I passed that fence; your men called it the North Fence. I have seen some stone fences, but that is the best I have ever seen. If we had rifles, we could hold that fence against the world. That is where we ought to stand. I think we can form a force of a thousand men at least."

"And you think the battle ought to be in the open?"

"Yes. If we go into a fort, they will simply flow around the place, leave enough force to hold it, and go on. Eventually, the people inside the fort would be starved out."

"A hand to hand battle," mused Stafford, "is not at all pleasant. We shall lose a lot of men."

"And if you don't have that kind of a battle, you will lose them all."

"What do you think, Hubler?" asked Stafford.

"Something like this. Suppose we have a thousand Americans on one side of a stone wall and two thousand Tartars on the other side. Each army is equipped with the same kind of weapon, arrows, spears, clubs. But the Tartars are doing something they are used to; they have been fighting for centuries. We are just relearning arts of warfare that have been obsolete in our civilization for hundreds of years. Result? Not a chance in the world for the cultured American. We are brave, but those Tartars are going to win easily.

"Now, what have we that those Tartars lack? Science of the highest form. When the crash came, we felt there was nothing we could not do in the field of science. Compared with our learning, the Tartars were idiotic children. In some way we have to make use of that scientific intelligence."

"But how can we," asked Webster," when we have no metals?"

"That is the point. We have to apply our education in some way we never thought of before. The intelligence we used to have is still there; our inventors are still alive; we still have our scientists. This has to be a battle between intelligence and muscle, and always in

the past intelligence has won. That is why man is ruler of the world today, even in a second stone age. That is why the most intelligent races have always been able to wipe out those of lesser intelligence."

"And what is your plan of battle?" asked Stafford.

"A rather simple one and rather impossible, it may be. I would put a front line of defence at the North Fence. The women and children I would put in Telephone Fort and there I would put the married men. From this hour on I would say to our scientists, 'Work! Think! Invent!! *'ON YOUR INTELLIGENCE DEPENDS THE SAFETY OF OUR PEOPLE!!'* Then I would hold the North Fence as long as possible and when the time come, I would retreat to the second line of defence. When that is taken those who are alive can go into the Fort. I hope, in the meantime, the scientists will solve the problem."

"Suits me," said Webster. "I am going to bed. Mr. Stafford, will you send men into the neighboring country and tell them of the danger and ask them for help? Eastern Pennsylvania, New Jersey and New York should do something. I expect a thousand refugees from the New England States to come in during the next few days, but, of course, many of that thousand will be women and children and tired and wounded men."

"Not all of them," said a new voice.

"Mackson!" simultaneously cried Stafford and Hubler.

"And a hundred Green Mountain boys with him!" laughed Mackson.

CHAPTER VI

Flight of a Tartar Tribe

IT was not till some years later, after communication with Europe had been re-established, that the people of America gained a full understanding of the Asiatic menace that threatened to wipe out the little colonies of Eastern United States.

For centuries the desert lands of Asia had bred broods of nomads. Tramps of the desert, they knew nothing except war, cared for nothing except their horses, weapons, and the open sky, and feared nothing except the silent enemy, Hunger. For a hundred years or more they would have food for all, horses, warriors, and even for the women and children. Their tents covered the plains like stars in the sky, their herds, uncounted and almost uncared for, provided all their needs. Then would come a year of famine, and, like caribou migrating, the Tartars would move, sometimes one way and at other times another way. Down into China, over the Himalaya to rich India, westward to Constantinople, even to Vienna. Northwest to Poland. Where they went they conquered, and boasted that where their horses tramped the grass never again grew green. Rapine and plunder and slaughter. Pyramids of heads! Little valleys filled with bodies of the slain. And in a land of plenty they would stay, to become the nobility of an effete Russia, the Overlords of Paranoia, the land that made the Great War possible.

The Metal Doom had nothing to do with the latest of these migrations. It would have come anyway. But because of the onset of the second Age of Stone, the irresistible force met nothing to stop it. No immovable body in the form of Charles Martel stood in the way. European civilization had learned to fight with the weapons of scientific invention. When these arms were taken from them, the European went down in defeat. At last the Tartars stood on the eastern shore of the Atlantic Ocean.

This was simply one of periodic migrations. It was as instinctive as that of the lemmings in Norway, the swallows of Europe or the flight of the wild goose to Labrador. Back of it was no distinctive purpose, no cool, intelligent calculation, no purpose born of adult reactions to definite stimulae. Instead, it was a slow, steady surging westward, constantly crashing its crushing criminal course, regardless of all opposition. And at last they reached the shores of the Atlantic.

For centuries the Dutch, Belgians, and Britons had sailed the sea. In boats of willow and skin, of wood propelled by oar and sail, in ships of iron with steam kettles in their darksome depths, they had sailed the sea. They had to go down to the water in ships or die of land sickness. When the Metal Doom came they sighed a day for their pretty playthings and then started to make other boats of wood, pinned together with wooden pins, and fitted with sails, primitive but beautiful.

The Tartars knew nothing of the sea. Their oceans of sand knew no other ship of the desert than the camel and the horse. They were nomads but not navigators. But they had to go West and west they went, in boats sailed by Europeans; and some ships sank and others were thrown back on the Irish coast; but enough came to the coast of Maine to allow a Tartar invasion of a continent hitherto immune from their ravages.

In Maine they first killed and then hunted for horses. Once on horses, they were at home; it was easier to kill on horseback. They went west and south and where they met other peoples they killed, for no other reason than the sheer joy of killing. Here and there they made pyramids of heads, not large pyramids, but of the correct shape and materials; and none of the Americans in their pathway were able to do anything but fight and die.

Down through Maine and Massachusetts they surged. And at last through Connecticut and towards the Hudson. Time meant nothing to them; geography was an empty term. All they thought of was to go on and on, and in the going kill.

They did not reach New York as quickly as Webster thought they would. He had traveled alone on the wings of despair, while they had come on in a group of two thousand, their hands and feet heavy with blood and satiated with killing. Thus, it was two weeks to a day from the time that Webster broke the news to the Stafford colony that the first riders from Tartary came within sight of the North Fence.

It was a peculiarly situated fence. Built of stone, it marked the northern boundary of the Stafford acreage. One end of it paused abruptly on a palisade that dropped three hundred feet into the Hudson. The other end ran into a primitive woodland, where the trees were so large and so close together that only a man on foot could pass through it. This wood was a mile wide and rested against a sheer mountain. There were two main roads. One passed through the North Fence and the other passed on the far side of the mountain.

On both sides of the stone fence ran as pretty a meadow as God ever greened for the pleasurance of his creatures. From the far side of the fence this meadow flowed downward till it came, a half mile away, to a little stream. Between this stream and the North Fence

the Tartar tribe came to a definite pause in their flight. There was something in the appearance of that fence that made them feel it best to consider it carefully. Up to this time they had simply flowed over opposition. Now they stopped.

CHAPTER VII

An Important Two Weeks

THE days following Webster's arrival was a busy one for the Americans located at or near Fort Telephone. It was so busy that Angelica Hubler was not sure that she had a Father and Ruth Hubler was satisfied that her husband thought more of his position in the Stafford Colony than of his place as a husband and a father. It was not till twilight that he had a chance to see his little family. They walked out in the pasture after supper. It was a pretty clear evening. They walked quite a little way, so far that they were alone in the pasture. Paul talked to his wife about the problem everyone was trying to solve.

"The only chance we have to beat these people," he explained, "is to use our intelligence in some way so we can crush them. If we depend on our muscles, we are sunk."

"You ought to be able to do something," replied Ruth. "I thought that some of the best known scientists in America would be with us in a little while, when the other Colonies join us."

"They have the brains all right, and if it were in the old days, before we went into the age of stone, we should have no trouble at all, but when we lost our metals, we lost everything."

Angelica felt very much out of it all. She tugged at her Father's hand:

"Daddy, what are those birds up there in the sky?"

"I think they are hawks, Little One."

"What are they doing, Daddy?"

"Looking around for something to eat."

"Are they flying, Daddy?"

"No, they are soaring."

And he explained to the little girl how the birds balanced themselves on their wings and, taking advantage of the currents of air, sailed back and forth without very much muscular effort. She listened gravely and then commented, "I wish I could do like that."

Hubler looked at her and then he shut his eyes. For a second, time stopped, went back, and then forward again.

"I am not feeling well," he explained to his wife. "The events of the day have been a little too much for me. I want to go back. I have to see Stafford. It is about something very important."

"You spend a lot more time with Stafford than you do with us," complained Ruth.

"That may be, but perhaps sometime things will be quiet again and then we can do what we want to; perhaps we can even go and live in the old house on the deserted farm."

"I should like that," commented Angelica.

Everybody had been working at full speed that day. The leaders had reached the point where they really wanted a rest. Even Stafford objected when Hubler insisted on an evening conference.

"You had better rest, Paul," he advised.

"I can't. This is something that I have to get off my mind. We cannot lose a minute. This may save our country. We have to talk it over."

"All right, but only an hour. These men will crack if we drive them too hard."

"I only want five minutes. If I cannot put the idea over in five minutes, I'll be willing to say it is a bum one."

In an hour's time he was facing twenty of the most brilliant men in that part of America. There was no time piece in that room, but there were hour glasses, filled with sand, which flowed from one glass container into another one.

Hubler placed a small sand glass on the center table.

"Gentlemen," he said. "There is an egg timer. It takes just that long to soft-boil an egg. And I am going to take less than that time to give you my idea."

And the sand was still flowing when he paused.

The result of his few words was electrical. His idea was so simple that everyone wondered why someone had not thought of it before. The conversation was general, spontaneous, encouraging. Here was hope! Mankind from that moment ceased to grope in the dismal muck of despair, and began to return to the culture that once marked the heighth of the electrical age.

Six of the men worked on into the morning, but Hubler excused himself and returned to Ruth and Angelica.

"What did that man do before the crash, Stafford?" asked one of the scientists, as Paul left the room.

"I think he was a bank clerk of some kind."

"He seems to have a complete insight into every problem. He must have have had an education out of the ordinary."

"I doubt it. He told me once that he never had a college education. But he read a lot, and the big thing he has is something that some of us lack—*IMAGINATION*."

During the next two weeks everyone worked hard at something. It was a peculiar period. In analyzing it later on, the interesting comment was made that during that time not a single written order was given. There was close harmony, complete co-operation between everyone. Everyone saw the peculiar work to be done which he or she was best fitted to do and then went and did it. At the end of ten days, Fort Telephone was well fitted to sustain a siege and all plans for the defence of the North Fence had been completed.

Stafford had been busy since his return from Pennsylvania. Without any intent on his part he had seen but little of the women he had brought with him from Shawnee. Others of the Colony had not been so indifferent and already six of the women had married. The three Doctors, however, still remained single. One day, after the decision had been made to fight the battle out at the North Fence, Dr. Perno deliberately stopped Stafford on his front door steps.

"Good morning, Tiger Killer," she said.

"And the same to you, Man Killer," he retorted.

"Listen to me, Mr. Stafford. There is going to be a fight soon—"

"Not a fight, a battle!"

"Well, anyway, there are going to be a lot of men hurt. Have you arranged for a field hospital?"

"I think so. We have two men physicians who were told to look after that part."

"How about us three women?"

"You had better stay at Fort Telephone. There may be a lot of work for you there."

"We, at least I—well, anyway, I want to help back of the fence."

Stafford shook his head.

"You might get hurt," he said.

"What difference would that make? No one would care."

"Are you sure of that?"

The man and woman looked at each other. At last Stafford said, with a little smile: "These are bad times, Dr. Perno. No one can tell where any of us will be in a few weeks. If I were sure of the future, I would like to talk to you about some things, but just now the kindest thing is to tell you to stay with the other women inside Fort Telephone."

Dr. Perno never replied. She simply turned and walked away. Stafford looked at her, somewhat puzzled.

He commented aloud, "I wonder what is the matter with that woman."

BUT other important matters claimed his immediate thought. Men were constantly coming to him for advice and suggestions. Messages had to be sent to this point and that. New arrivals had to be welcomed and arrangements made for their comfort, pending *THE DAY*. These new arrivals were interesting; they were all rather well educated men, and, independent of each other, had all arrived at the same place as far as their weapons were concerned. Axes of stone, bows and arrows, spears represented their walking arsenals. One group, a little one and the only one from Delaware, brought a catapult, on a cart. It was capable of throwing a hundred pound stone, but it took some time to load it. Against fortification it might be useful; but its effectiveness in fighting an enemy in the field was a question.

There was a great deal of discussion concerning the use of cavalry. Stafford was opposed to it.

"We are fighting," he said, "an enemy who are expert horsemen. Fighting from the saddle is second nature to them. If we went into them on horseback, we should be wiped out. I think that the place to keep our horses is back of the Fort. If we are defeated, the women and their guard might need those horses to escape to the West. I think that we have to do what we can on foot, and hope that our scientists will come through in time."

On the thirteenth day there was a general movement of the fighting force of the American army to the North Fence. Spies had told of the final approach of the Tartar tribe. All realized that the next day might tell the final story. There were only about a thousand men to defend the fence, and it was a long fence for that number to defend. Stafford hoped that the attack would come at one point and that they would be given sufficient warning as to where that point would be to concentrate there. He realized, and perhaps they all did, that if two thousand Tarters stormed all of the fence at the same time, one thousand Americans would soon be dead. The leader wondered whether it would not have been best to leave a larger percent of his force behind the walls of the Fort. Only two hundred of the older men were there.

At the end of the thirteenth day, just as the sun was sinking, a new group of men joined the Americans. Stafford and his officers looked rather askance at the leader. He answered the unspoken questions, the ill-concealed antagonism.

"We are from Boston, and we are not what you call Americans. I can talk English, but most of my men talk any other language better. Most of us are from Sicily, and I know you don't like us. We used to be bootleggers and murderers and even white slavers, but when we left Boston, after the city broke, we took our women with us. We tried to behave ourselves, but everyone seemed to be afraid of us. We never had a break; so, we kept on murdering. Then those Huns came, and we had to run. They got our women. Understand? The girls are all dead now, but these men have never paid for them. We have run before them, just waiting for the chance to collect what they owe us. Give us a chance, Mister."

"We will give you a piece of the fence to defend," said Stafford. "You may not be our kind of Americans, but we are glad to have you with us. Perhaps, after the battle is over, we may understand each other better."

"We don't want to fight behind the fence," answered the man. "You fellows understand how to use those bows and arrows, but we have to fight the way we used to fight. We have knives. Understand? Knives. Just stone knifes, but we know how to use them. And not one of us but has lost his woman and we want to collect."

"I think you will have a chance," said Stafford kindly. "We will send you some food and drink, and tomorrow you will have the chance to use those knives."

It was dark. Sentinels were pacing the Stone Fence. Here and there along the four miles camp fires were burning as though to show the world that here civilization was quietly preparing for its last stand against barbarism.

Stafford had a final talk with Hubler, who was to bear the responsibility of command till daybreak. Then he slowly walked down to where his horse was picketed. A hostler was petting the horse's nose and whispering to him. Absent minded, Stafford mounted the horse, spoke to it, and rode away.

"By-by, old Tiger Killer," whispered the hostler.

Stafford wheeled the horse around.

"Is that you, Dr. Perno? You go right back to the Fort."

"Yes?" asked the voice, and there was a certain soft insolence in the tone. "Yes? Always good at bossing, aren't you? But this time nothing is going to happen. The three of us Medics are here and we are going to stay here, and we are going to do the work of three men and do it better than any three men could do it. You are going to need us, even if you won't admit it."

Stafford galloped off into the darkness.

CHAPTER VIII

The Battle of the North Fence

THE next morning was clear. There was no fog, not even a haze over the meadow in front of the stone fence. The Tartars had camped on the far side of the little stream and there everything was activity. On the defensive side of the fence there was not much movement. It was Stafford's plan to keep the enemy in ignorance of the number and location of the

Americans The fence, nearly seven feet high, had been made a little higher in some places by the addition of large stones placed near each other to give loopholes for the bowmen.

The Delaware men had their catapult near the center of the defence. They were eager to try their strange weapon, but realized that the psychic shock would be greater than any actual damage done and that at the best but few casualties would result from each stone thrown. Still, they had the range accurately determined and were sure they could do some damage.

The Vermont men had been placed in the woods. That was really a place of honor, for there was no stone defence there, and the fighting would be man to man. The Green Mountain boys were anxious to show what they could do, and boasted that they could lick their weight in wild cats.

At the last moment, Stafford had sent one hundred married men back to Fort Telephone. That left less than a thousand to hold the fence. They were divided in groups of fifty, all except the men from Boston. They insisted in their purpose of holding the center of the line.

The morning was half gone when several hundred of the Tartars waded across the creek, came up the hill to within a hundred yards of the fence and then, breaking into small groups, began to shoot arrows into the air. They were expert shots. Soon the arrows began to drop from the air down just in back of the fence. Then it was that the Americans had cause to be thankful for the height of the wall, for, by pressing closely against the stone fence, the defenders were completely protected from the sky missiles.

Now two other groups crossed the creek and lined alongside of the first two hundred. All advanced till they were within fifty yards of the wall. They began now to shoot for the openings in the top of the stone rampart. There was still no sound, no answering response of any kind from the Americans. The Tartars seemed puzzled. What was on the other side of the fence?

Several hundred more crossed the little creek then. There were at least a thousand Asiatics occupying an area an eighth of a mile wide on each side of the cement road which passed through the gate, but there was no gate left.

Stafford had given rigid orders that nothing was to be done without a signal from him. He appreciated the element of suspense, the value of surprise. The Americans held firm to his orders but the Boston bandits, already hyperemotional, were driven frantic, by the death of their leader. He had peered through a loop hole just at the wrong second and died with a stone pointed arrow in his forehead. They saw him fall, started cursing in Italian and the next minute the entire group, nearly a hundred, were over the fence and running down the meadow.

They were armed with nothing but their flint knives, twelve inches long, sharp as needles at the end, really terrible weapons for in-fighting. They had their left arms wrapped with blankets, intending to use them as shields. They were on the Tartars and into them before the men from Asia realized what was happening.

Stafford saw what the end was going to be. There could only be one answer, but in order to give the Bostonians what aid he could signaled for sharp shooting, careful, selective archery, with a definite target for every arrow. Each man within range was to shoot ten arrows and then stop. The signal was three long blasts on the ox horn.

The Sicilians ran into the men from Tartary and were at once engulfed. It were as though an amoeba had opened up, and, allowing a piece of food to enter, had once again closed its wall. There was not much noise, just a confused struggling, a tossing here and there and a gradual carrying of the entire mass toward the rivulet at the bottom of the slope. At last the fighting came to an end. The men from Boston, the Italian bootleggers, had joined their women, but in their journey they had carried with them the Asiatics. Days later when a careful estimate became possible, it was thought that at least three of the enemy had died for every Sicilian. It was at the most a gesture. In a spiritual sense, it was a supreme sacrifice.

Hubler stood by Stafford and watched the assault.

"How is the wind, Paul?" the chief asked, at the same time wetting his finger and holding it up in the air.

"It is wrong in two ways," answered Hubler. "In the first place it is blowing in the wrong direction and in the second place it is not strong enough."

"Then we have to depend upon ourselves?"

"Yes, until the wind changes."

"I would give anything for an airplane."

"Certainly, and so would I. No use wishing for the moon. Look! There goes a group on horseback headed for the woods. Must be at least fifty in that bunch. Shall we send help to the Vermont men?"

"I think not. They would be insulted. We need every man we have here. Mackson would be insulted. He said he would hold the woods. I think he meant it. Look there! That is one reason why we cannot send help. This looks like a real charge."

It was. Fully a thousand Tartars were running up the cement road. They were going to break over the stone fence, and then spreading out turn back and wipe out the Americans. Stafford ordered the bugler to sound one long blast on the horn. It was the signal for concentration at a threatened point.

The Asiatics were massed. The Delaware men dropped three stones into them, each weighing a hundred pounds. The aim was perfect, but it was like dropping sand into a pond.

AND now into the charging mass came the thudding arrows. No time or need for careful aiming. All that was necessary was to aim at the mass. Not an arrow missed a target. Still, they came on toward the wall, up on the wall and over it. Fifty yellow men dropped to the ground and started the Berseck fight with their stone hammers.

The Americans closed in on them, first with long spears, and later, as these broke, with hammer and tomahawk. It was hard, terrible combat; first one large group against another, then a lot of little groups and finally duelists. Now came the sound of stone mutilating flesh, the sharp breathing of laboring men, the yell and gasp of the mortally wounded. At last it come to an end. The wall was safe. Hundreds of Tartars streamed back to their camp, but hundreds remained, the blood of Asia mingling in little pools with the best blood of America.

Stafford and Hubler, though leading the defence, came

through unharmed. They rested on their axes, as they wiped the dripping sweat from faces, blood flecked from their silent enemies. They looked at each other and then at the meadow. A man came up.

"Wish to report that the Vermont men held the woods," he said, and then, swaying slightly, dropped dead.

Hubler dropped to his knees and turned the man over.

"It's Mackson," he cried. "They held the woods but I guess they were wiped out in the doing of it."

"Oh! We are holding all right," commented Stafford. "We are holding, but I guess they have a thousand men that so far have not started to fight. If they charge the fence again, it is going to be too bad—for us."

Hubler stood up, wet his finger and held it up toward the sky. For a minute he held it there and then dropped his hand.

"No change in the wind," he said.

"Then we might as well call the men closer together."

A man came up.

"We have no more arrows, Boss."

"Sound the horn for assembly. We must have three hundred men who have so far not shot an arrow. They will have to join us."

"That will leave most of the fence unprotected," said the Head of the Delaware men, who had come up just in time to hear the conversation.

"We shall have to take a chance on that. If they flank us, we will have to cut our way through to Fort Telephone. It will be better to fight in a mass than to be cut down piecemeal."

Just then a clap of thunder was heard. Black clouds began to form to the rear of the North Fence. A breeze began to blow.

"It has come," cried Hubler. "Just what we wanted. Now, if our boys can only come in time. If only it works!"

"It has to work!" replied Stafford. "See! The Tartars are forming for another charge. Their entire camp is beginning to cross the creek. Send the signal. An arrow into the air, carrying a white pennant. Quick. Hubler! I cannot see you."

And Stafford dropped to the ground. Hubler was with him as he fell. A woman pushed him away.

"You fool!" she hissed. "Go and do what he told you to. I will tend to him. Must be bleeding somewhere and never knew he was hurt. Probably would have died and nobody known it if he had not fainted."

And Dr. Perno started to find the bleeding point.

And at the same time the signal arrow blazed into the air, vivid against the blackness of the thunder clouds.

The Tartar tribe started up the meadow. All of them this time.

On the other side of the North Fence the Americans waited for the final test of strength; waited for what they felt was only one ending; hoping when every point of common sense told them that the time for optimism had come to an end.

Then from the mountain top on the other side of the wood came something that looked like a vulture, and another and another, till twelve were soaring in the air. There was no beat of wings; simply a careful balancing against the air currents. They came lower and yet lower till they were between the two contending forces; some in the wide meadow between and some over the Asiatics. Now it could be seen that they were not birds but men in gliding machines. And *from the gliders dropped death.*

The Tartars, puzzled, looked up in the air, wondered at what they saw and, too late, started to run. It was useless. On every gust of wind came the living death, curving in wreathing billows like fog from out the sea.

The yellow men ran and died. Most of them died before they came to the creek. The rest died trying to get under the water. In ten minutes it was all over. The flight of the Tartar tribe had come to an end. Starting nearly two years before in Gobi, it beat its last wing stroke at the base of the North Fence.

Once again intelligence had conquered over brute force.

From the top of the stone wall the American watched the debacle in perfect safety. A dozen of the leaders gathered around Hubler as though they expected him to say something. He did.

"It is not the big things in life, gentlemen, that count. I suppose that most decisive battles have been won by some accident, some little thing that no one thought about, like the sunken road at Waterloo. The thing that saved us today, that made America safe for the white race, was a sudden change in the wind. We could not have used the gliders had the wind not been strong enough to keep them in the air, and, with the wind blowing as it did before the storm, we would have been killed by the poison gas instead of the Huns. I think the real heroes of the day were the men who used the gliders. Yes, I know we kept it a secret, but we were not at all sure of them, or whether we could use them, and we did not want to disappoint our men. Sailed nicely for crude construction, didn't they? We were lucky to find a lot of poison gas that had been stored in glass demijohns. We tied the demijohns upside down to the gliders and had ropes to the glass corks so they could be pulled out at the right time. It was a new gas the Army was going to experiment with just before the Metal Doom came. Suppose we stop talking and see if we can save any of our wounded?"

"That is all attended to," said Dr. Brown.

CHAPTER IX

Wreckage

THE survivors of the battle were tired, but there were men and women who had remained in Fort Telephone during the battle. These came, as soon as they could be sent for, and helped care for the wounded. Some could be saved but the wounds of a fight in the stone age were different from those in the age of steel, far more disabling and deadly. Yet even the hopelessly wounded were cared for by loving hands. Dr. Brown and Dr. Hufford directed the work of the little field hospital. Dr. Perno had disappeared with the stretcher bearers who had carried Stafford off the field. It seemed that one patient was enough for her.

The field of battle on the other side of the fence could not be investigated. The poison gas still hung in swirling wreaths and till it was all blown away no one could venture that way. But the leaders knew that all the Boston men were dead, and a search of the woods showed that all of the Green Mountain boys were dead except ten, and of these, five were fatally wounded. The Delaware men had lost twenty of their number. Pennsylvania had seventy who would never return and Staf-

ford's colony had thirty dead. In the emergency hospital that was slowly being filled in one of the barns, over one hundred Americans were being cared for.

The American dead were buried in one long trench back of the fence they had so ably defended. That fence, four miles long, seven feet high and two feet wide was their only monument. During the next week, as soon as the meadow was safe, hundreds of men and horses hauled cord wood down to a large funeral pyre and there the men from Asia were burned. For days the flames, ascending to the skies, sent a message of victory to the western world.

Of the twelve men who had sailed the skies in the hastily constructed gliders, seven came to earth safely back of the American lines. The other five crashed to an earthly death but not till they had contributed their share to the victory.

A month after the battle there was little to show of what had happened. There was an acre of blackened meadow land, but that was later plowed up, harrowed and timothy sown. And there, for all the years to come, grew grass and clover richer than on any other of the Stafford fields. The men from Vermont, Maine, Delaware and Pennsylvania went back to their homes; some remained in a deep sleep by the North Fence and there shrubs were planted and blossoming flowers, and sweet smelling roses. Twenty years later the National Government made this battlefield a National Park and erected a memorial arch over the gateway, where the concrete road pierced the fence, and on the arch were carved the words:

"Such Men Can Never Die, But Live Eternal Heroes"

There was work to be done, extra and unexpected tasks, but at last life returned to normal, and Hubler had time to spend with his family and Stafford.

The Chief had been badly hurt. There was no evidence external of the injury, but he had been struck by a stone ax on the head, a blow that must have been broken by his mat of hair and the leather cap he wore, yet which must have caused a severe concussion. He was asleep for several days and when he did awake he was moody and an extremely poor conversationalist. Everyone was worried about him; all missed his cheerful laugh, and his kindly interest in the little things around him.

"You have to shake out of it, Stafford," urged Hubler. "The Doctor says that you are all right, and Dr. Brown says there is not a thing wrong with you—that you just think you are sick."

"These women Doctors interest me," the sick man replied. "Of course they have been wonderful. They tell me that Brown and Hufford worked miracles in the hospital, and even in the thick of the fight they were right there doing what they could for the wounded. But I just don't like a female Medico. Once a sick man gets in their hands they seem to think they own him in some way. I suppose it is the Mother instinct in them. I believe I should have been well by now if I had had a man treat me, but somehow when I dropped on the battlefield, Dr. Perno was right there and she has been in the same place ever since. She has been just as nice to me as can be, but I am really tired of having her for my Doctor."

"Why not discharge her?"

"Yes? You know why. What has happened to the other women?"

"You mean those you brought from Shawnee?"

"Yes."

"They are all married. Dr. Brown was the last one to go. She had an interesting case, one of the Vermont men. She saved his life by some kind of an operation, and she was so interested in it that she married him. She said it would take a year to see how the operation turned out and she did not want to lose sight of him in the meantime; so, after the other Vermont men went back, this one stayed on and they were married yesterday. He is a real nice fellow, a college graduate and all that. So, they are all married now except Dr. Perno."

"I wish she would go and marry someone," sighed Stafford wearily. "Why don't you suggest it to her, Paul?"

"Not my business. Why don't you?"

"She might think I was growing personal. I tell you what I am going to do. Wait a few days more till my head is a little clearer and then go away again. Too many people around here to suit me."

"I don't know where you would go where it is any quieter."

"I do. I bet this minute it is as quiet as can be right at 42nd and Broadway. That is the very idea. Always wanted to see what happened to little old New York since the crash and now I am going to see for myself. Poor old Mackson told us about the curse of the cities but it may not be as bad as he described it."

"Going right away?"

"In a day or two."

"Don't go," pleaded Hubler earnestly. "Nothing there but wreckage!"

"Then that is the place for me. I think that I have made a mess of things. With you it is different; you have Ruth and the little one, and she is certainly a child to be proud of. But with me there is nothing worth while. I guess I was wreckage long before the Metal Doom, but civilization covered up the decay. When we got into the Stone Age I just couldn't make the grade. The other boys did, but I just seemed out of place. At times I felt like a disinterested spectator. I have had just one thrill in all these months and that was when I killed that tiger."

"Didn't it thrill you when those Tartars jumped over the wall? Or don't you remember it. I was too busy to watch you closely, but it looked as though you were having the time of your life."

"Honestly, Paul, I was bored. I tell you there is something wrong with me. I guess I am crumbling into red dust, like the metals."

At that moment Dr. Perno came into the room.

"Here is your eggnog, Mr. Stafford."

"Just a piece of wreckage," sighed Stafford, as he drained the glass.

CHAPTER X

The End of a City

THREE days later found Stafford tenting in Central Park. He was in a rather depressed state of mind. While essentially a rural-minded man, he had

delighted in his occasional trips to New York City. The park had always fascinated him. The idea of acres of country surrounded by apartment houses whose pent houses almost pierced the clouds intrigued him. When he visited the Metropolis he never failed to spend at least some hours in the little oasis and practice his woodsmanship. To find some wild animal there, if only a skunk or chipmunk, was far greater sport to him than trailing the gold diggers of Broadway.

He had anticipated that the Park would be alive with humanity. At least he was confident that he would find some folks living there. In this thought he completely lost sight of the inability of the average New Yorker to adjust himself to any new situation. While he might be able to rapidly learn the mysteries of the Subway, he never would be able to learn the art of supporting life unless surrounded by cafeterias and delicatessen stores. So, while he found many evidences of past humanity in Central Park he found no present inhabitants.

From the standpoint of housekeeping, the grounds were a pitiful mess. Thousands and hundreds of thousands of people had sought refuge there, abode for a while in makeshift tents and then, leaving most of their treasures, had wandered on in search of that greatest of all riches, food. Everywhere bones strewed the green grass, mute evidence of past tragedies and hungry dogs. All was chaos, disorder and ruin. Yet, nature was trying her best to restore her domain to its former beauty; the grass was tall, the trees green, and the flowers a riot of color.

On all sides of the Park were buildings in complete collapse. What interested Stafford was the fact that so much of this collapse had taken place internally; the buildings had apparently caved in and, while some of the débris had fallen into the streets, most of it had piled up on the sites of the former buildings. Had there been an accompanying earthquake, hurricane or even a period of high winds, the avenues would have been filled fifty feet high.

The wanderer found a part of the park that seemed cleaner than the rest and pitched his tent. His two horses were picketed and a fire built. Though he was apparently rather isolated, he took every precaution against surprise and attack. Night found a quiet city, except for the howling of distant dogs. The man wondered what had happened to the dogs of New York.

"More dogs than babies here in the Park the last time I was here," he commented to himself.

Towards dark he heard the sound of steps crashing through the weeds. He jumped back of the fire and prepared his bow and quiver of arrows for action. An old man came into view on the other side of the fire. At least he looked like an old man. He looked across the fire and saw the man with a bow and arrow in his hands.

"Don't shoot!" he cried. "I am harmless."

"All right," responded Stafford, "but I am taking no chances."

"That's right. But I live here in the Park. I have lived here since the trains stopped running."

"And I just came," said Stafford.

The two men sat down by the fire.

"My name is O'Connor," began the white-haired man, "And that is a name that anyone can be proud of. I lived over in Jersey, but I worked here in the city, and I used to spend my holidays in the Park. I liked it. Used to think that it belonged to me and hated to see the litter of newspapers and peanut shells and banana peels. Would spend hours picking things up and making the place tidy. When the rush came, the place was a mess. Might have been a million people here, and everything you could imagine in the way of property, and that, with the wild animals running around loose from the Zoo, made the pretty place a regular Inferno like the one Dante described. People went insane and bad in every way, and their sickness was as much spiritual as physical though many of them starved to death.

"I came up here and I stayed. Found a little cave and furnished it with the stuff people dropped, and then, after everybody left, I started to clean the place up. The litter was so thick that you could hardly step on a square yard of clean, healthy grass. I made a regular programme of so many square yards a day and an extra allowance for Saturdays, because I never thought it right to work on Sunday. It was hard work, at least part of it, but I am moving right along. Yes, indeed, and ten more years will see a nice clean park, believe me, Mr. Stafford."

"That is a most remarkable story, Mr. O'Connor. And all by yourself all these months?"

"No. There has been lots of company. There were the dogs."

"Yes, I heard them tonight."

"Funny about them. They cannot leave the city. Looks as though they were afraid to go into the country: yet, it is hard to see what they live on—unless?"

"They hunt in packs, do they?"

"Yes, but I do not mind the dogs. When they come at night I am in my cave. It is the Subway people I am afraid of."

"But—didn't the Subways cave in?"

"I suppose some of them did, but much of the system must have held its shape. When the building began to give way lots of people went down there. It must have been a dark, unholy hell for a while. Hundreds of thousands of people down there of all kinds and all ages—in the dark—waiting for something to happen.

"I am not sure what did happen. At times I get thinking about it till I nearly go mad and then I start gathering rubbish till I become calm again. But it was a survival of the fittest; not the best, you understand, but the kind that were best able to fight it out; and now there is a Bronx gang, and a Circle gang and a Times Square gang, and I suppose other gangs downtown and over the river."

"Not nice people, I guess," Stafford commented.

"No. Not at all nice. I have seen them pass over Central Park more than once and wanted to kill them, but what could I do? Yet, I have a plan, and some day I am going to work it out."

"You do not seem to like them?"

"Not at all. If the dogs cut them off one at a time and eat them, it suits me. Dog eat dog."

"Where is your cave?" asked Stafford.

"Up the Drive a way. Must have been there for centuries but no one knew about it. I happened to see a crack and worked around it, and first thing I knew I went inside. Nice little place; even has a spring of water."

"I bet it is clean," laughingly commented the man from the country.

"You bet it is. Come and see me tomorrow night.

If you come before sundown, you won't have any trouble finding me. Perhaps you would consider living with me. This place here is bad—if the dogs come."

"How about my horses?"

"There is a fine place for them up on the rocks back of my cave."

"I may come. At least I thank you for the offer, and will think about it. I do not want to make you feel badly but I wanted to be by myself for a while, so I could think things over, and that is why I came here to the city; still, it is nice to have you call, and I want to keep in touch with you."

"I wish you would come," said the old man wistfully, "I have a real nice library."

"I will use it," said Stafford as he said good-night.

The next day the country man rummaged through the remnants of the Broadway shops. He found most in ruins and almost all looted. On the following day he saddled one of the horses and rode up C. P. West. There were piles of débris on the city side of the street but there was a rather wide, clear space on the park side. Just as he started to turn west to find the O'Connor home, he saw a lone horseman come down the Avenue. He stopped, waiting for the man to come to him. At last the stranger came near enough to make recognition possible.

"Dr. Perno!" cried Stafford. "Whatever are you doing here?"

"Seeing the city."

"Did you know I had come here?"

"Of course not! You don't think I would follow you, do you? I wanted to get some surgical supplies and we women talked it over and decided that I might as well come as anyone else."

"Since you are here," sighed Stafford, "I suppose I will have to be nice to you. Suppose we call on O'Connor?"

CHAPTER XI

The End of O'Connor

"HE is a friend of mine," explained Stafford. "We only met the other day but I liked him from the first. I may go and live with him. He said his cave was on the West Side. Suppose we ride in here and hunt for him? Likely find him at work; he has promised himself that he will clean up the park."

"Does it need cleaning?"

"It does. The whole city does. In fact, you have no business being here by yourself."

"I have always been able to take care of myself!"

"No doubt. But there are some parts of life in New York that would not be very pleasant to you."

As they talked, they rode through the park. The part they saw was very clean. No doubt of the efficiency of O'Connor there. Dr. Perno remarked about it.

"In the old days it was never this clean."

"There is a part over there that the old man overlooked," answered Stafford, as he rode towards a peculiar mass at the foot of a tree.

He jumped off his horse and knelt beside it.

"It's O'Connor!" he gasped. "They have killed him."

The Doctor was instantly by his side, making a careful examination of the body.

"They didn't just kill him," she whispered.

"No. This is torture; it is the work of one of the Subway gangs. He was afraid of them and warned me against them. They must have caught him in a trap of some kind. He didn't have a chance for his life; he was not much of a fighter anyway."

"What are you going to do about it?" asked the woman.

"Bury him first, and then find his cave. And after that clean up the city."

"You mean the Subways?"

"Yes."

"How are you going to do that?"

"I do not know. The old man said he had a plan. Perhaps the cave will show what that plan is. He must have his tools there; so, suppose we find it and then come back?"

The cave was rather cleverly hidden. Stafford was a woodsman and a hunter and he simply tracked the foottreads till they ended in a cunningly concealed opening in a large rock. O'Connor had been right. The entrance was large enough to admit a horse and the cave itself was ample quarters for several persons and their belongings. It was cleanly and comfortably furnished. A fireplace and blackened rock showed that ample draught was provided by a crack in the wall. Everything necessary for comfort was in the large room; there were even luxuries in the form of books and pictures.

"When we see this place and realize what kind of a man those devils killed, it makes one more determined than ever to make them pay for it!" exclaimed the man.

Meantime Dr. Perno had been rummaging around. She cried. "Look at this stuff. Just like grey candles."

Stafford took a piece to the door to get a better light. "It is dynamite!" he commented. "Be careful of that candle of yours or you will blow us all up. How much of this stuff is there?"

"At least a hundred pieces."

"That is what he meant when he said he had a plan. He was going to blow up their stairways, and let them die in the trap. I really think that when the time came he would not have been hard enough to do it. He was a gentle soul."

"Let's go and bury him," said the woman, "and let us plant some flowers on the grave."

They did so. It was nearly sundown when they finished.

"We had better stay in the cave tonight," advised Stafford. "I tented out last night, but the danger is great. We will stay here and I will watch."

"We will take turns," the physician insisted.

But the man insisted on guarding the entrance to the cave till daylight. Then he woke his companion and agreed to go to sleep for a few hours. It seemed only a few minutes of sleep, in reality it was three hours when she woke him.

"There are a lot of men out there," she whispered. "I think they are trying to find the cave. They must have come back, found that the old man was buried and now they are hunting for the ones who buried him."

"Can you shoot?"

"Of course I can."

"Then let's get busy. But first I am going to fix some short fuses on a few sticks of dynamite. Ever light a giant firecracker and throw it so it explodes in the air?"

"Yes. I used to do that."

"We will try it, if we get in a jam. Suppose we take our arrows and see what we can do?"

Crawling through the doorway, they hid behind the concealing shrubbery. About fifty men were walking around in front of them, evidently hunting something. A few were as close as twenty feet. They were a hard looking lot, and amid their laughter and curses they recalled the slaughter of the previous day and bragged about it.

THAT was more than Stafford could stand. Motioning to the woman to begin, he fitted an arrow to his bow, took careful aim and let fly. Almost at the same time Dr. Perno fired.

Six men were down before the gangsters knew what was going on. Then they started to run. Stafford came out, and kept on killing. It was clever archery, but in five minutes it was all over.

"Now, Doctor, you go in and get breakfast, and I will go and recover our arrows. I am not sure but I believe the results will go toward proving that you are a good marksman, even if you do use little arrows."

"I did all my practicing on birds and squirrels," she replied, "besides I know all the vital parts. Anatomy is a useful study at times."

"You certainly are a peculiar woman!" laughed the man.

"It sounds nice to have you acknowledge that I am a woman," was her reply, "and now I will get breakfast. I do not want to be around—when you get the arrows. And don't forget. They are going to come back."

"I expect that. And when they do, we will be ready for them."

It was an hour before he entered the cave. His face was drawn and haggard. She looked at him inquiringly.

"Seventeen," he said in answer.

"All dead?"—"Yes."

He ate the meal she had prepared in silence and then, without a word, went and started to prepare the dynamite. Somewhere the old man had found the sticks and several hundred feet of fuse. The farmer understood dynamite. More than one day he had spent clearing land, blowing up tree stumps and large rocks. When he finished, he had all the dynamite arranged in three arcs around the mouth of the cave. The ends of the fuses were all bunched together at the top of the rock over the cave.

"We are going to stay up here," he exclaimed. "It will be too dangerous in the cave. I am going to take the horses back and hide them. We will hold the rock. They will come here, find the cave, try to open the door, and will form a large crowd around the entrance. At least I hope they will. Then we will set off the fire works. We may have to fight for our lives after that, but I doubt it. I think they will be too frightened to do much fighting."

The woman looked serious.

"I suppose you realize that you are planning to kill them without giving them a chance for their lives?" she asked.

"They have done that a thousand times to others. And they did it to my friend."

She sighed.

"This was a pretty place yesterday. It would have been a nice place to spend a vacation."

"We are going to spoil it," retorted Stafford.

"I am not sure that I like you," cried the angry woman. "I believe you delight in making a mess out of things."

He pretended that he did not hear, but went off with the horses.

At noon the mob came, several hundred of them, murder in their hearts. No matter who had done the killing of the morning, they were going to do the killing of the afternoon. There were women in the crowd, brought on by the hope of finery or treasure. They had no trouble this time in finding the door to the cave. Opening it was another matter. The confusion was great. All crowded in, cursing and laughing and hunting for something to kill. Then came a hissing as of dozens of snakes. Some heard it and tried to listen; others saw the sparks in the grass and wondered why they were there.

AND THEN THE EARTH VOMITED.

Dr. Perno and the man lay on the overhanging rock and shut their eyes. Dust filled the air. Here and there were cries, but for the most part, there was an overwhelming silence. A few men ran off into the woods.

"Don't cry, Dotty," whispered Stafford, gathering the trembling woman into his arms.

"I can't help it, John," she whispered through her tears. "I came to New York to find something, and now I want to leave."

"Did you find what you wanted?"

"I believe so. What did you come here for?"

"I am not sure that I knew at the time, but I know now."

"Are you sure?"

"Positive."

That seemed to satisfy the woman. At last she broke the silence.

"I hate the city. I want to get away from it as soon as possible."

"Where shall we go?"

"Why not go to Shawnee?"

"But all your friends are gone from there. We should be alone."

"That is why I want to go there, stupid!" whispered Dotty.

END OF PART II

A Matter of Nerves

By William Lemkin, Ph.D.

(*Continued from page* 249)

would certainly have recognized it. *Down to the river—Carl*—Ha—Ha!—why, it was just one of those little reminders I used to leave you, Doris, about meeting me in the park. Your father must have found it lying around, thought it was my last will and testament—and there you are!"

"Now about my mysterious disappearance," he continued, turning to me. "You know how rotten I had been feeling all along. The whole darn situation was affecting me so much that I was driven nearly crazy. Early yesterday morning I quit the house. Where I was going I didn't know. I just wanted to get away from it *all*, for a short stretch at least. I guess I must have been temporarily out of my head at the time. But somehow I knew that I'd have to come back—I *wanted* to come back! I wandered around in the wind and the blizzard until I couldn't stand the heat—that is, the *cold*, any longer. When I finally got back to the house in the evening, I found it deserted—and everything all disarranged—as though people had left in a great hurry. I came across your gloves on a chair, Mr. Nelson, and I knew that you were in on this thing too. And then I found *this* lying on the floor—the *note*—and I just put the whole thing together in my mind, and in a jiffy I knew just what had happened, and where to look for you."

"If ever there was anyone," I remarked earnestly, "who broke into a situation at just the opportune moment, it was you, when you got down to the river in time to make the rescues."

Carl brushed that matter aside with a modest wave of the hand, as though it were something not important enough to merit consideration.

"It was just up to me to do it," he said simply. "First there was Doris—my Doris. What would I do if she—if—what would I do without her? And then the doctor—I couldn't let anything happen to him. He's Doris' father—and besides, if he were to—to meet with any harm, then, where would *I* be?—doomed to this sort of reversed existence for the rest of my life. Kind of a selfish idea, eh? Well, I don't know whether I really stopped to figure the matter out in detail just that way. I merely saw the whole thing at one glance—and went into the river after them."

Then he suddenly burst into a peal of merry laughter.

"The funniest part of the whole thing," he grinned, "was when they applied first aid to the three of us after our ducking in the Hudson. You and your father, Doris, were treated for submersion, exposure, frost-bite and such things—and *me*—why they treated me for the finest case of—guess what!—*heat prostration!*—Ho!—Ho!—now doesn't that just beat all——?"

Doris interrupted his gale of merriment. "My father ——" and her tone was a question.

"He came through fine," was Carl's reply. "He's home now. I never really suspected how much you meant to him, Doris. I never knew that *anything* or *anybody* meant as much to him as his great experiment on nerves. But he went into the river after you without a thought about himself—so he admitted to me only a short time ago. And when he got back to his senses, and they told him that it was I—when they told him how it all ended up, then you should have seen him cut up. He nearly hugged me to death. And you'll never suspect what he's doing at this very moment. Would you like to know, darling?—He's getting things ready up in his laboratory for to-morrow's little operation on me—No!—No! Not those new stunts he was talking about. Not the short-circuiting of my sight, and taste and feeling—not the change of emotions—from love to hate and all that—something altogether different—he's going to *unscramble* my nerves! bring me back to normal again—for you, Doris——!"

Carl's head bent down over the pillow, and his face touched the paled cheek of the girl. Their fingers met and clasped——

I stole softly out of the room.

THE END

Red Moon

O Red Moon, shining darkly through the Autumn haze,
Tell me now your story—the tale of all your days.

Tell me how you happened, in that time of old;
Tell me of the aeons, before your heart grew cold.

Were there men and women—dwellers on your sphere?
Were there little children, whom you once held dear?

Knew they aught of problems—had they aught of strife?
Did they drink of smiles and tears from the cup of Life?

Climbing up the heavens, through the long, long ages,
Tell me of your living soul; backward turn your pages.

Let me see the pictures, O Moon of dusky red!
Whisper of lives and loving, ere you were cold and dead.

Tell me of your peoples—did man and maiden wed?
Did Venus claim your homage, in ages long, long sped?

O darkly flaming Red Moon! O smoky, murky, dead Moon!
Are you not dismayed and tired, Moon, over your age-old plight?
Does your spirit brood, O dead Moon, watching your timeless plight?

. . . V. R. EBERHART

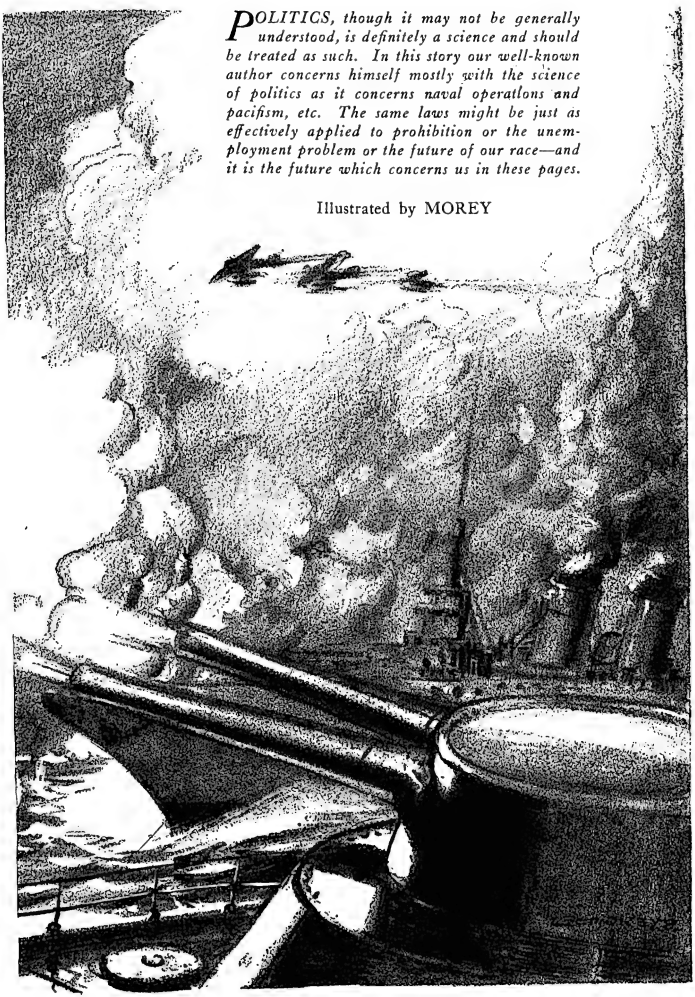
POLITICS

by Murray Leinster

It was lifted a hundred and fifty feet, clear, as contact-fused shells went off in an inferno of destruction. It was flung even above its own smoke-screen. MacReady saw it break in pieces and vanish again behind the smoke.

POLITICS, though it may not be generally understood, is definitely a science and should be treated as such. In this story our well-known author concerns himself mostly with the science of politics as it concerns naval operations and pacifism, etc. The same laws might be just as effectively applied to prohibition or the unemployment problem or the future of our race—and it is the future which concerns us in these pages.

Illustrated by MOREY



"The War of the Pacific has at least taught one lesson to naval strategists. No naval force can ever be said to be inconsiderable, if officered and manned by a capable and determined personnel." (*Modern Sea Power, Grahame, New York, 1932.*)

LIEUTENANT MacREADY saw the enemy from the *Minnesota's* fighting-top and rejoiced with a bitter rejoicing at the sight. This was in August of 1934, you see, just four days after the Battle of Hungars' Bank, and the *Minnesota's* whole ship-company thirsted for vengeance, both upon the enemy and the politicians who had sacrificed the rest of the fleet to win an election. The politicians were safe, but the enemy was here, and the *Minnesota* tore through the water toward them with the speed and fury of an avenging Nemesis.

"Enemy in sight, sir," said MacReady crisply into the telephone transmitter strapped to his chest. "Bearing—"

"*Already reported and ranged,*" said a curt voice in his earphones.

MacReady felt a little shock of surprise. Then he remembered and felt lonely and useless. He looked down. The guns of the top forward turret were winding up to extreme range. The top turret was coming around. He saw monstrous flames. The shock of the discharge reached him even before the blast of the explosion tore past the fighting-top. Three sixteen-inch guns had gone off. It was a ranging salvo. The shells were invisible, screaming demons of steel and explosive; hurtling upward now, but they would descend nearly twenty miles away and it was Lieutenant MacReady's task to watch their fall. Or it had been his task until the new range-finders were installed while the wreckage of that boiler-explosion was being repaired. And at any instant it might be his task again.

He counted the seconds; refocussed his glasses; wet his lips. Somehow he knew that guns were swinging below him. Grim, gray-painted tubes were moving slowly to new positions, pointing ahead. He saw the enemy vessels vaguely. There was what looked like a mêlée of ships on the horizon's edge. Two huge hulks, one of them listing visibly even at this distance. That would be the *Langley,* the aircraft-carrier. Her sister-ship seemed a shade low in the water, but at this distance one could not be sure. Over and about the distant shapes, tiny motes danced. Aircraft. Army planes from shore, fighting in the place of the naval aircraft that had shared in the disaster of Hungars' Bank. And there was the *Seattle,* on fire but fighting savagely. He saw the flashes of her guns. The *St. Louis* was with her. They were putting up a rear-guard action to enable the aircraft-carriers to get away. Those tiny specks were the destroyers. American destroyers. Half-wrecked and battered but fighting gamely as they limped homeward. . . .

The ranging salvo splashed. Three tremendous water-spouts, rising simultaneously, high above the fighting-top of any ship afloat.

"Right six, up two—" snapped MacReady.

The *Minnesota* burst into flame beneath him. Lieutenant MacReady started at the blast of sound. He was dazed by the mere shock, but he knew that every gun that could be brought to bear ahead had fired in one colossal burst of flame. And before his range-correction was completed!

His ear-phones barked:

Range that broadside."

"Y-yes, sir," said Lieutenant MacReady.

He began to count the seconds. The lower forward turret was shifting slightly. Twenty-two, twenty-three—. The three guns spouted flame and dingy-brown smoke. This was the very latest constant-pressure powder, guaranteed by the ordnance-department not to vary more than one thousand pounds to the square inch breech-pressure even under service conditions . . . Fifty-eight—Fifty-nine. . . .

The *Minnesota* was making twenty-eight knots. Blue water flowed past her with a deceptive smoothness. One of the distant aircraft-carriers began to spit tiny flames from its anti-torpedo battery. There was a flurry of destroyers—American destroyers meeting an attack. Lieutenant MacReady could see the enemy ships clearly now. Four big ones besides the destroyers. Pocket-battleships, ten thousand tons, with more speed, more armor, more hitting power than anything else twice their size afloat. But the *Minnesota* was a forty-thousand-ton ship, the biggest battleship in the world. She was, incidentally, the only first-line ship left to the American Navy after the Battle of Hungars' Bank.

The broadside struck. A monstrous mound of water rose to an incredible height. The stern of an enemy ship showed from behind it. The rest of the enemy vessel was hidden behind the broadside-splash. It seemed one single, volcanic eruption of water.

"Right one-half," said Lieutenant MacReady into the transmitter before him. "Up—"

The mound of water began to fall. The stern of the enemy ship tilted with its descent. It rose upward till the keel showed. It dived slowly. . . .

"By God, sir!" said Lieutenant MacReady shrilly, "She's sunk!"

Sixteen-inch shells are not good medicine for pocket battleships. MacReady swung his glasses swiftly. There was a ranging salvo of shells still aloft. It was his duty to spot their fall. . . .

He saw the splashes. Two of them. One was short. One was an over. The third . . . The stern of the enemy ship grew suddenly hazy.

"Straddled!" barked Lieutenant MacReady.

But the terrific concussion of the ship's whole forward battery tore at his chest. He felt something warm trickling down his chin. His nose was bleeding. He counted seconds with a strained attention. Another ranging blast below. There was a sudden roaring overhead. Two enemy bombers with six fighting-planes escort were racing toward the ship. The army planes from shore were diving for it . . . The whole anti-aircraft battery of the *Minnesota* barked savagely, twice, MacReady heard terrific concussions and the sound of a dogfight going on somewhere up aloft.

"I'd be happy," thought MacReady in savage satisfaction, "if only some of our politicians were on those ships out there. We're shooting like a streak. We couldn't miss if those damned pol—"

A monster mound of water rose up, obliterating one of the three remaining pocket-battleships. MacReady's lips formed the word *"Straddled!"* but there seemed hardly any need. The mound slowly flattened out and the sea was clean where it had been. A pocket-battleship can stand an amazing lot of pounding, but there simply isn't any armor that will keep out a sixteen-inch shell. And when several of them strike at once, the

result is deplorable. Seconds later the third pocket-battleship was silhouetted by splashes. The whole fabric of the *Minnesota* shuddered beneath MacReady as for the third time every gun that could be brought to bear was fired in one world-filling blast of sound. And seconds later a fourth ranging salvo. . . .

SPLASHES began to rise about the *Minnesota* herself. But a ten-thousand-ton ship is not a steady firing-platform, and though it may carry armament far out of proportion to its size, it is really designed for fleet work, with smoke-screens, aircraft spotters and other aids to efficiency. The *Minnesota* was a self-contained fighting unit, capable of fighting like a whirlwind, and it was taking the offensive. Which was an advantage in itself. One shell fell fifty yards from the *Minnesota's* side. The next salvo from the ship that fired it should have done some damage.

But then the third broadside struck, and when the sea subsided, a pocket-battleship was rolling over with a grave dignity to turn turtle and sink. And seconds later the fourth ranging salvo struck, and as its splashes leaped forward, the *Minnesota* roared for the fourth time. . . .

Lieutenant MacReady was dazed and dizzy. He felt the ship changing course beneath him. Three broadsides had struck and three ships were sunk! Of course the *Minnesota* carried the heaviest metal of any ship afloat, but it wasn't natural! There'd been no time for the spotting of shells and the correction of range. Just a ranging salvo, and as it sent splashes skyward, the whole forward battery of the *Minnesota* flamed. No delay. No waiting. Above all, no error! The *Minnesota* fired every gun that it could bear. Twenty miles away and a long time later four acres of sea arose mountainously—with scattering splashes outside—and anything afloat in that four acres of sea simply ceased to exist.

It happened again now. The fourth broadside struck, it seemed squarely. When the turmoil of its arrival ceased, the fourth enemy pocket ship was still afloat, but explosions were coming from it with lightning-like rapidity. And suddenly it vomited flame from somewhere amidships, broke jaggedly in half—and the sea was clean.

The *Minnesota* had already changed course. There were only enemy destroyers afloat now, after only four broadsides. The distant American ships drew to one side, fighting savagely as they moved. A torpedo struck home somewhere out there, and a thin sliver of metal which was an American destroyer upended and went down in a clean dive. And the air seemed suddenly full of buzzings as of a myriad mosquitos.

"Lieutenant MacReady," said the curt voice in his headphones. *"You will not be required to spot ranges as long as the new range-finders function. You will, however, search for possible subs, and especially for torpedo-trails."*

"Yes, sir," said Lieutenant MacReady exultantly.

He turned to grin at his fellow-spotter in the forward fighting-top. A ringside seat at the big show! Enemy aircraft were racing for the *Minnesota*, but the Army ships from shore were taking a deadly toll. MacReady glanced back at the distant thin line of the coast. Motes were visible in the sky. More army planes, coming out from land. Fighting-planes all, save one squadron of heavy bombers with a haze of tiny pursuit-planes whirling before it, in order to serve as a protection.

A pall of blackness arose far away upon the sea. The enemy destroyers were making a smoke-screen. The *Seattle* and the *St. Louis* were the targets toward which the lengthening spearhead of blackness reached out. They had been under heavy fire from the pocket-ships, before the *Minnesota* came out. If the destroyers could sink them and the aircraft-carriers, it would amount to victory. Destroyer-attacks in daylight against ships like the *Minnesota* are unhealthy, but the lesser and already-crippled American ships might be wiped out.

But the *Minnesota* spouted flame from fifty gun-muzzles. The anti-aircraft guns barked in one monstrous volley. They barked again. There were terrific concussions up aloft, and Lieutenant MacReady saw a huge ball of yellow smoke—T. N. T. smoke—spreading with an enormous velocity in mid-air.

"Got a bomber!" he whispered to himself. He wiped the blood off his face and grinned from ear to ear with sheer excitement.

The broadside landed, fifteen miles away. And it struck, not as a concentrated blast of sheer destruction, but as a barrage. Separate splashes rose in glittering similitude of stalagmites on a lime-cavern floor. But each pinnacle, shining in the sun, represented the point of fall of a six-inch shell—they were small and few—or an eight-inch shell—there were more of them—or of mighty sixteen-inch shells themselves. The broadside of the *Minnesota* had deliberately been spread out to cover a huge area thinly. But a destroyer does not need much pounding to be put out of action. The tip of the spearhead of smoke heading for the American destroyers simply ceased to be. And the *Minnesota* flamed again, and again, and again. Six times, at fifteen-second intervals, she belched out coruscating waves of fire. A long time later the broadsides fell.

The anti-aircraft batteries barked savagely. Firing like the heavy guns; simultaneously salvos at single targets at single instants. Picking out the enemy bombers and leaving the enemy single-seaters to the army ships. Over and above the droning of many motors there was now the intermittent sound of colossal explosions. Enemy two-thousand-pound bombs were going off in mid-air as the bombers that carried them were wrecked by screaming hails of metal.

MacReady fixed his glasses upon the distant smoke-screen. It was ragged and torn. A single enemy destroyer showed clearly for an instant. It was changing course and streaking for the far horizon. The rest were gone! The forward torrent boomed a ranging salvo. MacReady watched feverishly. Army ships coming out from shore in a never-ending stream. Somewhere far aloft— The ranging salvo struck! A quarter-mile over! But the forward battery crashed forth for the tenth time in this action. Every gun bearing ahead crashed. . . .

MacReady was bleeding at the nose and ears from the concussions that had battered at him. He was bruised all over. He was deafened and his bloodshot eyes streamed water, but he sat in a stilly glow of satisfaction, wishing only that certain politicians could be upon that panic-stricken destroyer that fled from a hail of death.

He saw the shells land. The fleeing destroyer was emitting a dense cloud of smoke to conceal its trail. But it was lifted a hundred and fifty feet, clear, as contact-fused shells went off in an inferno of destruction. It

was flung above even its own smoke-screen. MacReady saw it break in pieces and vanish again behind the smoke.

And then there was only the buzzing of a multitude of motors aloft and all around. The tearing, rasping chatter of machine-guns became audible. MacReady gazed upward and saw the Army planes hunt down ruthlessly and relentlessly every enemy plane that was aloft. With bitter satisfaction he watched the flying things go fluttering helplessly downward, or dive as plummets of flame into the sea. His satisfaction was only tempered with a slight regret when the last enemy pilot fought a magnificent lone duel with an Army formation, and entangled two of them in his final, blazing fall.

The *Minnesota* shepherded the other American ships toward the Golden Gate, gleaming and unmarred and belligerent. There were two scout-cruisers under her protection, the *Seattle* and the *St. Louis*. The *Seattle* was still on fire, but was getting it under some control. There were two aircraft-carriers, one of them listing heavily. There were seven half-wrecked destroyers. That was all. They went limping slowly toward the shore, through waters littered for a space with wave-wetted wings. . . .

They went ahead of the *Minnesota* and entered the harbor. They anchored, watched by silent, stunned, almost panic-stricken crowds which thronged the water-front and did not cheer at all.

Because this was four days after the Battle of Hungars' Bank. The enemy fleet held the Pacific. The *Minnesota* alone excepted, the whole first line of the American battlefleet was at the bottom of the sea. Save for a few submarines and perhaps half a dozen still-fugitive destroyers—now being hunted down by the victorious enemy—these limping, shattered carcasses of ships constituted the Navy of the United States of America.

And one day before, the enemy had scornfully broadcast the terms on which it would make peace. Hawaii, Guam, the Philippines, and the Panama Canal were the only territorial demands, but an indemnity was insisted on and the enemy also required the surrender of the *Minnesota* and a pledge that the United States would never build more than a minimum number of small, slow cruisers in the future.

Throughout a panic-stricken nation, strong pacifist political pressure was being brought to bear to force Congress to accept those terms.

> **"There have been in the past, and there will be in the future, attempts by politicians to dictate naval and military policy for other than naval and military ends. But never again will a civilian official of the United States dare issue a direct order governing naval or military operations! He would be impeached, at least. In the present temper of the populace, he would probably be lynched."** *(Address to graduating class, U. S. Naval Academy, by the Secretary of the Navy, 1938.)*

LIEUTENANT MacREADY had been at Annapolis with the commander of the torpedo-boat-destroyer, *Wasp*. In those far-off days MacReady had been a lowly plebe, while the destroyer-skipper was an upper-classman, but they foregathered on equal terms in MacReady's quarters on the *Minnesota*. MacReady offered libation and the *Wasp's* commander raised his arm.

"Here's hell to politicians," he said grimly. "They sank our fleet!"

MacReady made an appropriate gesture, accepting the toast.

"Now shoot it," he commanded. "What happened?"

"If you want to know," said the *Wasp's* commander bitterly, "they sent the battlefleet out with orders to avoid any action. An election is coming on. Pacifists are strong, politically. If we blew the enemy out of the water, they'd denounce us as murderers, vote against the Administration, and change the political complexion of Congress. Therefore, the Admiral was told to avoid a fleet-action until after elections if he could, and if he couldn't, to make sure it wasn't decisive defeat for the enemy. Isn't that pretty?"

"Dam' pretty," said MacReady ironically. "Oh, dam' pretty!"

"The enemy fleet was spoiling for a scrap," went on the *Wasp's* commander more bitterly still. "They've been building pocket battleships, playing with 'em like kids with a new toy. On paper they had more gun-power than we had, in more but smaller ships. We had the weight and the punishment power. They thought they could lick us. They came over to force a fleet action. They ignored Hawaii and came on with a supply-fleet ten miles long behind 'em. And you can't handle a modern fleet, with destroyer-screens and the like, without using wireless We were picking up their code stuff and trying to decode it. They were doing the same with ours. Both sides were using radio direction-finders, of course. They knew where we were, and we knew where they were. But they wanted a fight, and we were ordered to avoid one. It couldn't be avoided!"

"'Hit first, hit hard, hit often!'" quoted MacReady. "But tell me, old man, *why* did the Admiral split his fleet?"

"Direct, specific orders from Washington!" snapped the *Wasp's* commander. "We knew the enemy was determined on a fleet-action and headed straight for us. The Admiral reported to Washington that a general engagement was absolutely unavoidable, and an attempt at anything but a decisive victory was stark madness. He got detailed orders—the plan that sank the fleet! Signed by the President as commander-in-chief. Politics! Armchair strategy that looked all right on paper, but—my God! The battle-fleet was to proceed northwest, with its radio silent. The two aircraft-carriers, with escorting destroyers, were to proceed southwest. The carriers were to keep planes aloft with their wireless outfits going, simulating a battle-fleet in movement. The enemy would head for them. At the logical instant they would cut off their wireless and run. And the battlefleet would make a demonstration proving its actual position to be a thousand miles or so from where the enemy thought it was. A trick to gain time. A trick to postpone a battle until after election. That's all! They say the Admiral cried when he read the order."

"Here's hell to politicians," said MacReady morosely. "Why didn't it work?"

"An air-photo from forty thousand feet," said the *Wasp's* commander sardonically," is of no ordinary use to anybody. It's taken through an infra-red filter that fog or clouds can't bother, but the Army doesn't use 'em because they don't give enough detail. But they'll tell the difference between a battlefleet and a pair of aircraft-carriers, all right!"

MacReady groaned. The *Wasp's* skipper went on grimly:

"That must have been how they did it. Silenced high-altitude planes and photos taken through eight miles of

haze. Anyhow, six hours after the battlefleet headed northwest, the enemy fleet split up too. They duplicated our maneuver. They sent their supply-fleet to meet us, with its wireless going full blast to simulate a battlefleet, and they sent their battlefleet to meet ours, full speed ahead and with its wireless shut off too. But they didn't leave their carriers behind!"

MacReady groaned again.

"The dirigible *Akron* sighted them," said the destroyer-skipper coldly. "They got her in twenty minutes, after she'd sent the alarm back and crashed twelve planes that attacked her. But that was too late. We were eight hundred miles away, with the whole air-service! You should have seen those carriers shoot planes into the air! One—two—three they went up! Streaking for the fight! It'd be four hours before the fastest of them got there, but they went! And the damned thing was nearly over when they arrived. Our ships had gone into action with only the ship-planes to spot and fight for them. The enemy had four carriers—little ones, but they carried a hell of a lot of planes. Twenty minutes after the opening gun, they'd wiped the skies clean above our fleet. There were only six planes spotting for our whole fleet during the second half-hour of the action. With smoke-screens in use, you know what that meant! There were only three during the last hour! The enemy laid down smoke-screens and potted at our ships from behind 'em. Our destroyers went through the screens and tried to do the spotting the air-service should have done. Suicide, but we got two of their pocket-ships and one of their super-dreadnaughts that way. Meanwhile our boats were going to hell and gone. When the airfleet arrived there was only the old *New York* and the *Michigan* above water in the first line, and we'd lost two-thirds of our destroyers. But they stayed afloat, those two old tubs, taking all the punishment the whole enemy fleet could give 'em, and passing out all they had—until our planes ran out of gas! It was all over then! They'd flown eight hundred miles to get to the fight. They were nearly out of fuel when they got there. And the enemy expected to gather them in when they made forced landings. Pretty idea, wasn't it?"

Lieutenant MacReady said pungent words.

"They did get three," said the commander of the *Wasp*, calmly. "But the rest somehow got blown up or crashed by their pilots before they jumped for the water. It annoyed the enemy. They left the pilots—in the water."

Lieutenant MacReady said more pungent words—much more pungent.

"MEANWHILE we on the decoy-fleet had been tipped off. Oh, a grand time we had! Orders first were to try to join the battlefleet. An hour later the old Admiral knew he couldn't hold out until the air-fleet got there, and ordered us to streak for home. The planes couldn't he turned back. They were gone anyway. He tried to save the carriers and the ships with them. We turned and ran."

The destroyer-skipper gesticulated bitterly.

"Then the destroyers from the supply-fleet hit us. We'd sent every plane we had to the fleet-action. They'd done nearly the same. So we fought 'em off. For four days we'd been running away from them, fighting night and day, when the *Minnesota* turned up. Those pocket-ships only got here this morning. Four days and nights of fighting, Mac! We sank three of their destroyers for every two of us they got, but there were twenty-four of us when we started out, and there were seven of us who came in, and the pocket-ships would have finished us if the *Minnesota* hadn't come when it did!"

There was silence. There was no noise anywhere on the *Minnesota* except an unplaceable dim whine which was a dynamo running somewhere. Out the porthole of MacReady's cabin could be seen the dim bulks of the two aircraft-carriers that had been brought in port that day. The *Langley* still listed heavily to port, but there were lighters clustered about her side and arc-lamps burned brightly. At three separate points, clusters of arc-lamps burned vividly on the harbor-water.

There was a droning hum overhead. It passed on and out to sea.

"Army planes," the commander of the *Wasp* said heavily. "Doing naval patrol. At last the Army can smother their air-force if they try any bombing. But what good'll it do? I haven't got a ship any more My engines were shot to hell. They're cutting off the bow of the *Wasp* with an underwater torch. They're going to weld it in place of the *Waddy's* bow, which looks like a full-blown rose. And our stern goes to replace the *Stingray's* tail. Out of three wrecks they'll make two ships that can steam. It'll take four days, with underwater welding. But what good will it do?"

"It depends," said MacReady without hope," on our shooting. *And* on politics. You saw our shooting today?"

The *Wasp's* commander nodded.

"I thought of you up there in the fighting-top, spotting shells. The air was clear and you could do it—"

"I didn't spot a shell," said MacReady. "The new range-finders have taken my job away from me and do it ten times as well. We've got fire-power now, old horse! And fire-control! We've got the new range-finders in. Those parallel-beam finders they've been working on for years."

His companion looked puzzled.

"All electrical," explained MacReady. "No observer at all. Two telescopes, one at each end of a base-line, and mounted exactly parallel. Fitted with photoelectric cells instead of eyepieces. You swing the base-line around and they sweep the horizon. And a ship on the horizon changes the amount of light that goes through a narrow slit to the photoelectric cell. It registers the instant the first telescope hits the stern of the ship. A fraction of a second later—because the telescopes are exactly parallel—the ship-image registers on the other cell. Both cells register exactly the same changes in current-output, but one is a fraction of a second behind the other. Knowing the rate of sweep in seconds or mils of arc, if one photoelectric cell lags behind the other one mil, and you know the base-line, you work out the distance in a hurry. See?"

"Complicated," commented the destroyer-skipper distastefully.

"Complicated, sure," agreed MacReady readily. "But man! Does it work? Those range-finders sweep their field ten times per second, ranging each way. We range the enemy ship twenty times per second and get electric impulses to read off. But better than that, we range our own shell-splashes and the target together, with the same instrument, at the same time! See the point?"

"M-m-m-m. That looks good!"

"It's even better!" insisted MacReady. "We get electric impulses, instantaneous, instead of observer's figures. The impulses go to an integrator that calculates the range and declination. That feeds into a computer that works up the firing-data—barometer, wind, humidity, and so on—and that goes to a relay that lays the gun! All working at the same time! The gun's laid on the target from the first second or two. Constant ranging gives speed and course of the target. The computer dopes 'em out, shifts the gun to where the target will be when the shells land, and we fire a salvo. And then the splashes get ranged by the same outfit in relation to the target! Errors in the firing-data and powder-lot—even wear on the gun-gears—are automatically corrected! Then we let go a broadside. It blows hell out of the target! Gun for gun and ship for ship, the *Minnesota's* the best fighting-machine in the world! And half our superiority comes from those finders. Why, man! our anti-aircraft finders range a plane, compute its course and speed in three dimensions, lay twenty guns on its most probable position at the time of shell-burst, and fire the guns—all in two-fifths of a second! They can do everything but play 'Home Sweet Home' on a piccolo!"

"Then," said the commander of the *Wasp*," why weren't the other ships fitted with them?"

"Dear heart," protested MacReady in fine irony, "haven't you ever heard of politics? We have a few men with guts in Washington. We have also a large number of elderly maiden ladies. The range-finders were in production. They were shipped here to be fitted. War broke out. There was a wave of popular sentiment against the rude and brutal practise of defending one's country against anybody else. The fleet was ordered to sea at once, because if it didn't get to sea, the pacifists might manage to forbid its sailing! With the old range-finders and air spotting we were on equal terms with the enemy. We could fight, anyhow! But even after the fleet had sailed, the political pacifists managed to get those orders issued that you wot of, and which sank our fleet. Politics, you see! It's sweet and pretty? And the *Minnesota* has the range-finders installed simply because one of our boilers blew up. It killed sixteen men. We had to be left in port, and while we were getting the mess cleaned up and repaired the Skipper put in the new finders. That's why we're damned near match for the whole enemy navy!"

"And what good does it do?" asked the commander of the *Wasp* bitterly. "You're making 'em a present. The peace terms call for the surrender of the *Minnesota*, and those damned politicians are going to accept 'em!"

Lieutenant MacReady leaned forward confidentially. "Old boy," he said under his breath," the Secretary of the Navy is *not* an elderly maiden lady. There has never yet been an American warship surrendered without a fight. Our skipper has told him we can have some destroyers ready to fight again in six days, and asked permission to commit suicide in his own ship. The Army's going to help, by fighting off enemy planes if an action takes place within a hundred miles of shore. So if the enemy wants the *Minnesota*, he'll have to take her! The Secretary thinks he can hold off surrender, in Washington, for those six days. If he can't, we go out before, without the destroyers, and smash our wireless so we can't be ordered to come back. And it will be suicide, and highly immoral to fight against a gallant enemy who has sunk our ships and left our plane-pilots to drown because they blew up their ships rather than hand them over, but—well—it'll be better than the other thing, won't it?"

"You're dam' right!" said the commander of the *Wasp*, hungrily. "I can shovel coal, or wash mess-dishes, or—or—"

"I think," said Lieutenant MacReady magnanimously, "that it can be arranged. The Secretary of the Navy will be fired. The pacifists will write in the school-books that we were murderers. But maybe, if we work it right, the politicians won't object. Because we'll be sunk. I know *I'd* hate to be a politician and have a Navy man look me in the eye!"

The commander of the *Wasp* stood up.

"I'm going back to slave-drive my men," he said feverishly. "We've got to get those destroyers ready."

"A politician is a man who believes that the greatest catastrophe that can possibly befall his country is the election of somebody else to the office he wants." (*Politics*, **Leinster, New York, 1931.**)

THE *Minnesota* lay at anchor in San Francisco harbor. The sun shone down placidly upon the scene. There were flags flying everywhere. Some of them were "peace-flags" and they flew brightly. Some were American flags. They were at half-mast. The city was still and dead. Newspapers came out at frequent intervals with huge hundred-and-twenty-point headlines and very nearly identical contents. Two destroyers had made port in Alaska. They had refueled and gone to sea again. One destroyer, battered and in a sinking condition, had made the port of Vancouver, B. C., and was unable to put out again. She was interned. It was rumored that American submarines had located the enemy fleet with radio direction-finders and had submerged in its path. Motors silent and men still as death, they had allowed the screen of destroyers and light craft to pass overhead. They had risen among the capital ships of the enemy navy. They had sunk three ships before they were destroyed. The enemy command denied the rumor. There was no other war news. Peace news was oratory in print, accounts of meetings and resolutions and other activities of the persons opposed to war even in self-defense.

In San Francisco the real sign of life or energy were displayed in two places only. One was the Navy Yard, where men worked frantically against fate with electric-welding and oxy-acetylene apparatus, doing work that required months of time and elaborate equipment in days instead and with make-shift materials. The *Langley* was having a patch made for the torpedo-blast in her side. It was being welded in one piece on shore. It would be sunk alongside and welded in place by Ellsworth underwater torches in the hands of divers. The *Wasp* was a fragment of herself, her bow and stern cut away and only her shell-torn middle section beached in shallow water to rust away. Every one of the returned vessels was aswarm with men. Their own crews were laboring like madmen to get them in shape to steam. They did not hope to attain to real battle-efficiency. They only hoped to patch them up so they could share in the last foray of the fighting forces of the United States Navy. If they could steam, and if they could fire a gun, the crews of these ships would

mutiny if forbidden a place at the suicide of the fleet.

The other spot, where activity was in order, was the headquarters of those organizations which opposed the prosecution of war against even a declared enemy. Speakers bustled in and out. Banners flew and gaudy placards smote the eye. Orators moved to strategic points to explain to half-stunned crowds that war was evil in itself and that the disaster of Hungars' Bank was the direct act of Providence, disapproving of America. Suitably edited portions of Scripture were available for distribution. And constantly through that activity for the service of abstract good ran the threat of political action, and an insistence upon the power of little mean men at the polls to undo the actions of bigger men who were deaf to the clamor of fanatics.

The orators ranged everywhere. Marine sentries stopped them at the Navy Yard gates, firmly refusing entry even to deputations of sad-eyed, hysterically righteous women intent upon pleading with the sailors not to murder the sons of other women, regardless of the fact that those sons of other women had not hesitated to sink the American battle-fleet. It was uncomfortable anywhere to be in a military or naval uniform, because of the reproaches of convinced opponents of war. Pacifism had become respectable within the past four years, and its proponents took full advantage of the immunity accorded to respectable men. An enthusiastic orator even had himself rowed alongside the *Minnesota* and began a moving speech addressed to the sailors, advocating mutiny and the consistent violation of all the articles of war, and was lured below the slopchute by a sergeant of marines. It was pure accident, of course, that the ship's garbage was discharged at just that time, but an indignant protest was immediately telegraphed to the Secretary of the Navy and all other Cabinet officers.

That was in San Francisco. In Washington there were parades in favor of peace. The President—being by American custom not only a Government executive but also the leader of a political party—was forced for the sake of his Party's chances in the coming elections to devote four hours in one day to the hearing of spokesmen for different groups of anti-war delegates from anti-war societies throughout the nation. The War and Navy Departments were picketed by determined, passionately sincere advocates of peace at any price. Senators and members of the House of Representatives were besieged by opponents of carnage.

In London, the American Ambassador was drily informed that the British Government, through sympathy with the present embarrassments of the American Government, would delay for the present the taking up of the unquestionably just claims of British subjects against the States which, while in the Confederacy, had sold bonds in England and later repudiated them. The American Ambassador took the hint, and cabled desperately that if the United States announced its renunciation of self-defense, that its standing before the world would be forever gone. In Germany there was laughter and ironically bitter comments in the journals. In France there was alarm and indignation at the threatened disappearance of an ally through what its official press termed national suicide. In Central and South America there was pure panic. Republics which heretofore had maintained a chip-on-the-shoulder attitude toward the United States now made frantic representations that the Monroe Doctrine would be without force behind it. They begged, they implored, they pleaded with the United States not to adopt a course which would ultimately involve their ruin with its own.

But in the United States, foreign opinion had no weight. Pacifism was an issue which would decide an election. It would determine whether Tweedledum should stay in office or be thrown out for Tweedledee. It was a matter of politics, and therefore much more important than national prestige or national security or the national honor itself to all the Tweedledums in office and all the Tweedledees without.

THE Secretary of the Navy was fighting for time, with the Secretary for War ably seconding him. These two men, at least, would lose their political status with the triumph of a no-defense attitude in the coming elections. Their place was to be taken—so the righteous had it—by a Secretary for Peace. And they fought tooth and nail, by argument and persuasion and browbeating and cajoling, to stem the panic of Congressmen in terror of political oblivion. But on the fourth day the Secretary of the Navy wired to San Francisco in code:

"Peace proposals considered in Congress tomorrow. Will probably be accepted the day after. I take responsibility of ordering you to use your own judgment in operations against the enemy."

The Secretary of the Navy would have committed political suicide when the order became known. But he would be able to look at himself in a mirror without shrinking. The captain of the *Minnesota* read the telegram with a grim and weary smile. He tossed it across his desk.

"We'll go out in the morning. The only question is, is that crazy MacReady right? And how many destroyers will we have?"

"Ten, sir, plus the scout-cruisers and the aircraft carriers. And the planes that went out to try MacReady's idea are due back at any moment, sir."

The message from the Secretary of the Navy neither interrupted nor intensified the feverish labor going on upon the battered ships that had limped into port four days before. An interruption would have slowed things up. An intensification would have been impossible. Repairs were being made with a reckless disregard for mere deficiencies in materials or means. One marvelous assemblage of plates and machinery had parts of six separate vessels in it. Another was repaired from four —one of them a troop-transport stolen from the Army while somebody painstakingly looked the other way. Depth-bomb sowers were being equipped for a new purpose, and a strictly improvised munitions-plant was unloading Army shells of one type and reloading their contents into naval shells of another sort entirely, which lacked full charges.

And Lieutenant MacReady was rapidly attaining to a state approaching heaven. A flight of Navy planes had gone out to sea, far beyond the view of pacifists and politicians. They had laid down a smoke-screen of the thickest and heaviest sort, and made certain tests. Then they laid down a second and made other tests. And they went roaring back to shore with Lieutenant MacReady filled with a quiet rapture.

He found the commander of the *Wasp* in his quarters, picking threads out of one sleeve of his uniform-coat.

"Pulling off some gold braid," he said ruefully to MacReady. "Mac, there's no room for me on this damned

ship. So I'm pulling some gold braid off. I'll look like a petty officer without it, and I'm stowing away till the action begins."

"Hold on," said MacReady unsteadily. "I'm sort of dizzy with success. But you've a right to share in it. You gave me the idea first. I'll go to the Skipper and ask."

"What idea. What in hell?"

"You talked about the enemy using an infra-red filter to photograph the battlefleet through eight miles of haze. It made me think. Have you ever seen the sun through a smoke-screen?"

"Of course! It's red."

"Quite true," said MacReady. "The blue rays are filtered out by a smoke-screen or by dust. Only reds remain. The sun gets redder as the smoke-screen gets thicker, because only the very longest of visible rays get through. The question came up, did infra-red rays get stopped at all?"

"Mac!"

"The photoelectric cells in our range-finders," said MacReady with a strange precision," are sensitive to infra-red. We went out to sea with a baby range-finder. We put on camera-filters that shut off everything but the infra-red rays. The range-finder worked perfectly well. Then we laid down a smoke-screen. The finder still worked. Then we laid down another one, thick and wide and deep. And the finder still worked. We're going to fight the last fight of the *Minnesota* that way. We'll be independent of aircraft for spotting, even if we're deep in the middle of a smoke-screen ourselves. And so I'll see if I've got a pull with the Skipper."

A long time later he came back, his eyes glowing.

"You'll sit up in the fighting-top with me, old horse. We go into action at dawn."

The commander of the *Wasp* started up.

"Praise God! You're sure?"

"At the present moment," said MacReady evenly, "the enemy fleet is bombarding Seattle. The word came through five minutes ago. It's steaming past, on the way south. Every ship, as it passes, flings a few broadsides into the town. The present estimate is that half the civilian population is wiped out, and the fleet is still passing. The enemy intention is evidently to hasten our acceptance of their peace terms."

The *Wasp's* commander clenched his fists and swore helplessly.

"We'll sail in time to meet them just after dawn," said MacReady calmly. "The *Minnesota* and what destroyers we've patched up, against the battlefleet that sank our own. Old horse, we ought to have a gaudy suicide. And so—" He poured libation. "Here's hell to politicians!"

"Strategy was defined by General Forrest, C. S. A., as 'getting the mostest men there the firstest.' Fire superiority may be similarly explained as getting the most shells to the target first. And fire superiority is the lesson to be learned from the Battle of the California Coast." (*Modern Sea Power, Grahame, New York, 1937.*)

THE dawn came quietly over the hills to eastward. In a vast silence the darkness thinned and the stars paled, and little winking shore-lights faded to obscurity as the sky turned gray, and nearly white, and then took on its normal blueness with only a small pinkish glow above the sun itself.

The *Minnesota* was headed north. Ahead of her there were five destroyers in line, with a scout-cruiser at either end. The monster aircraft-carriers trailed behind her, their decks white with land-planes. More tiny destroyers darted here and there about them. In the rear, again, two fleet-submarines ploughed along at twenty knots. They had come into harbor with their crews bleary-eyed from exhaustion just three hours before the *Minnesota* sailed. And they were going out again, refueled and with their torpedo-racks refilled, with half their crews sleeping the twitching slumber of exhaustion in their bunks. Fresh men would navigate them until the action began. Then the exhausted men would rise and share in it. It was their right, and they had demanded it.

The rim of the sun peered over the eastern horizon. Vividly scarlet, it was not the dull-red ball that presages a sultry morning. It came slowly and heavily up over the edge of the world and like some monstrous balloon broke awkwardly free and swam around into the sky. The sea became abruptly a cerulean blue, and the waves glittered and flashed in the sunshine.

Lieutenant MacReady, up in the *Minnesota's* fighting-top, turned to the former skipper of the *Wasp*. He pointed to a trailing wake of gulls, fluttering tirelessly after the ship.

"I've watched those things for hours, in my time," he observed. "They'll see something, today. Thank God we've got clear weather! Old horse, we've got a fine day to die in!"

The skipper of the *Wasp* was searching the sky ahead through binoculars.

"The enemy," he said briefly. "See?"

He pointed. An infinitesimal speck against the pale-blue sky was hovering too steadily to be a gull. Lieutenant MacReady spoke crisply into the transmitter strapped to his chest. There was a sudden flurry over on one of the aircraft carriers. Half a dozen planes shot upward, climbing steeply. They passed nearly over the *Minnesota*. The two in the fighting-top could see the helmeted, goggled head of the last pilot as he went streaking in the wake of the rest.

"Never had much use for the Army," said MacReady absently, with his eyes searching the skyline ahead, "but they're turning out pretty good eggs. They do like a scrap, anyhow."

The tiny fleet moved steadily onward. The sun shone upon the vessels, and they were gleaming and defiant in its early rays. But the *Minnesota* alone was unblemished. Patches showed clearly on the rest. A sailor was absorbedly engaged in painting something on the *Stingray*. He was trying to cover up a rust-spot that had appeared almost overnight on an unpainted weld.

Silence and stillness. Far overhead, the fighting-planes from the carrier were mere specks, as tiny as the ship they had gone up to destroy. That enemy observation-plane turned tail and fled. The American planes raced after it. They went beyond the horizon and disappeared.

The clamor of a gong sounded below. Lieutenant MacReady turned to his companion and grinned.

"Mess! But they'll send something up for us."

The fleet went on. Fifteen minutes. Half an hour. An hour. The sea was clean before them. Then tiny pin-points appeared on the horizon.

"Enemy destroyers," said MacReady. He spoke into

his strapped-on transmitters and looked down at the guns. They remained motionless. The *Minnesota* went on steadily, ignoring the distant tiny ships, awaiting enemies worthy of her steel. Her destroyer-escort kept formation. The attitude of the American fleet was that of scorn.

More pin-points. More destroyers. They drew closer, but not too close. They spread about, keeping to a thirty-thousand-yard range. They hemmed in the horizon ahead and to westward. Heavier ships appeared—scout-cruisers. The sea seemed speckled with enemy craft. Light ships closed in the horizon behind the *Minnesota*.

"That's so they can mop up if we try to run for it," said MacReady. "Ready for torpedo-attacks at the end of the action. Lord! There's a bunch of them!"

There were a bunch of them. Three-fourths of the destroyer-force that had come across the Pacific. As many as the American battlefleet had taken into the Battle of Hungars' Bank. They turned the horizon on three sides of the *Minnesota* into something fancifully resembling a picket fence.

Enemy pocket-battleships came into view, steaming at full speed to be in at the death. They deployed in line ahead, cutting off the *Minnesota* from the open sea. But they did not fire a gun. Now little specks began to appear in the air above the enemy fleet, and still there was no offensive movement. Then the six full-sized battleships of the enemy came grandly over the edge of the world. They moved for an apparently predetermined position.

"This isn't to be a battle," said MacReady. "They're figuring it as an execution—a beautiful example of fire-superiority and fire-control. Considering the psychology of our gallant foes, I imagine they'll try to blow us out of the water with a simultaneous broadside from every ship in the fleet. It would be neat, and probably effective. Or do you suppose they think we came out to surrender?"

The ten destroyers with the *Minnesota* suddenly belched forth black smoke from their funnels and shot ahead. Weaving back and forth, darting here and there, they began to make an impenetrable smoke-screen between the *Minnesota* and her enemies. MacReady flung back his head to look at the land. Yes! A long black threadlike line was lengthening from the shore. Army planes. Five miles from the *Minnesota* that line bifurcated—split in two.

"God bless 'em!" said MacReady comfortably, "they're just on time. They'll give the destroyers a busy morning. Every bomber the Army owns is in that line! We've got air superiority in this action!"

The *Minnesota* was in the center of perhaps a square mile of open sea, with a growing wall of blackness about her. On the fighting-top MacReady saw over it.

He watched the enemy ships building up a precise, ceremonial formation for the destruction of the *Minnesota*. MacReady's eyes gleamed suddenly. The top forward turret swung in place and its guns wound up to nearly maximum elevation.

"They do love ceremony, the enemy," he said gently. "They're arranging themselves for our destruction as if it were a review. If I were the Old Man, I'd not bother about ranging salvos after the first spotting. We've got them all ranged, anyhow, and with one salvo for wind and barometer and so on, I'd fire broadsides only."

THE *Minnesota's* top turret-guns flashed earsplittingly—the first ranging salvo. The destroyers were weaving madly about, extending and thickening the smoke-screen about her. It would have blinded any other ship in the world, and made her utterly dependent upon aircraft observation. But spotting is exacting work, and the Army observers wouldn't be sufficient in spotting for the Navy anyhow. The enemy evidently counted upon it. The smoke-screen was wide and thick. Here and there it billowed upward enough to obscure the horizon. But a long time later MacReady saw three splashes rising mountainously, near one of the pocket-battleships of the enemy. He opened his mouth automatically to telephone a correction, but before he could speak, the *Minnesota* let loose. And this time she was broadside on to her target. Not only her forward battery, but fore and aft, with all her main and secondary battery, she flung a hurtling hell of steel and flame toward the enemy. The recoil made her whole vast fabric shudder. Fifteen seconds later she flamed again. Fifteen seconds; the air split asunder with the same concussion. Fifteen seconds. . . . With unvarying, mathematical precision, she let go twelve broadsides in three minutes. It was impossible to discover that her gun-muzzles shifted.

She came about in a long sweep. MacReady and the skipper of the *Wasp* ignored their bleeding noses and the bruises of sheer concussion. They swept the horizon, quivering like hounds on the scent.

"One—two—three!" MacReady counted in an awed voice. "Three of them sunk, by God! Thank God for heavy metal! And another one's out of action, or I'm a Swede!—*Ah-h-h!*"

An apparently uninjured speck, against the very edge of the world, tore itself apart with a sudden vehemence. There was a flash and a monstrous ball of dense black smoke. Then there was another gap in the ceremonial formation which was to execute the *Minnesota*. It had either forgotten that the American ship was the most powerful war-vessel in the world, or it had counted upon no more than human accuracy in its shell-fire. But there was no human factor-of-error in the gun-laying on the *Minnesota* now. She was a machine—and the most deadly fighting-machine on earth.

Flashes appeared along that distant line of ships. The *Minnesota* dived into the smoke-screen all about. A destroyer darted aside to give it room. The smoke-screen had been laid in long spreading trails of blackness. From aloft, it would look like a rather untidily executed maze. MacReady caught a glimpse of the fore deck of the *Langley*—its after deck was blotted out by a hill of densest black—and plane after plane after plane was taking off with the regularity and precision of bullets going out of a machine-gun. He saw a spreading fan of planes rising from another spot—the other carrier. Then the *Minnesota* vanished from beneath him as it went swiftly into darkness. A long distance away he saw the other fighting-top above a sea of black. Black billows rolled lazily about the horizon. He saw a ship on fire, in the enemy line. That was the work of one of the fleet subs. The enemy did not know of their existence or escape. They took a heavy toll, between them, and one of them finally blew itself to atoms beneath the pocket-battleship that rammed it. Which was not healthy for the pocket-battleship.

MacReady heard his companion shouting. He was

chattering excitedly into the telephone-transmitter strapped to his chest. A concussion-wave struck him. The ship was firing again. The gas-blasts from the guns blew the smoke-screens crazily about. One; fifteen seconds—two; fifteen seconds—three. . . . Six broadsides the *Minnesota* fired from the thickest of its own smoke-screen.

Hell broke loose a half-mile astern. A six-inch shell screamed between the fighting-tops of the *Minnesota*. That was a stray. The form of fire from the capital ships of the enemy fleet was pouring into the ocean where the *Minnesota* might have been, but wasn't. They couldn't see her. Her smoke-screen hid her before they had fired ranging salvos. And range-readings by even trained observers are not much good without trial salvos and spottings. The *Minnesota* had started the action on her own terms, which—with air superiority on her side—were much better than the enemy had intended.

Two minutes of silence, save for the screaming of enemy shells searching for the ship. The smoke-screen was lengthening and spreading. The *Minnesota* had four square miles of blackness in which to hide, but it was blackness only to the enemy. MacReady caught a glimpse of a monstrous dogfight going on aloft. Enemy aircraft could not spot the *Minnesota* from above their own ships. So intricately woven was her protecting screen that a position nearly vertically above her was essential. The enemy aircraft were trying to get it. The Army ships were keeping them from it. The solitary American battleship was using tactics which not only were entirely new; they were tactics which were impossible to a ship without control of the air, without eyes to penetrate the screen and prevent collision with her tiny consorts, and without utterly perfect spotting for her shells.

Enemy shells shrieked all about. An eight-incher landed somewhere and burst with a sickening detonation. The whole sea seemed to be boiling. Shell-splashes leaped upward above the smoke-screen, glittering in the sunlight. They were visible to the enemy, but not especially helpful without a sight of their target. There was a flickering ball of madly fighting planes a mile and a half to the right. Something huge and winged burst out of it and raced toward the *Minnesota's* fighting-tops, with a dozen Army single-seaters pouring lead at it, and two enemy combat planes dying magnificently in the attempt to protect it.

The big ship's anti-aircraft battery crashed venomously. There was a colossal, an incredible explosion. The huge winged thing vanished in an expanding ball of flame. Two combat-ships shriveled and fell with it. Another reeled and a wing came off, and it began to descend, whirling crazily like a maple-seed. The rest of them turned and went madly back toward the ball of roaring, crackling fighting things.

The *Minnesota* shuddered again. And again. And again. Broadsides of every gun that would bear, fired from abysmal blackness into the bright sunshine. Storms of screaming metal, flying shrieking through space, to fall twenty miles away. From the tail of his eye MacReady saw a magnificent duel of two fighting-planes ended in the fraction of a second as the trajectory of some ship's broadside passed through the area of their combat. They were annihilated. But MacReady could not see it all. He was battered at and pounded by waves of sheer concussions. He heard a voice beside him, thinly, and it was the commander of the *Wasp*, but MacReady could not make out what he was saying, and did not try. Then he caught a glimpse of the enemy fleet as the rolling billows of the smoke-screen lowered momentarily.

THE noise did not lessen for an instant, and the noise was like the din of all hell let lose. But MacReady did not hear it, because something huge over in the enemy lines was pointing its bow skyward and going down slowly by the stern. A monstrous mound of water rose above it as a broadside struck. The mound subsided, and that monstrous ship was only a third of a ship above water. It was going down and down. . . . A pocket-battleship was on fire. A broadside struck one of the enemy's big ships. Fifteen seconds later, another. Fifteen seconds later still, a third. Fifteen seconds later still, a fourth. . . .

"Fire-power!" cried MacReady exultantly amid the tumult of ten thousand explosions. "We've got it! The heaviest broadside in the world! Infra-red screens! Beam range-finders that spot our own shells with the targets they strike! Powder that varies less than a thousand pounds pressure at the breech! Six ships we've sunk, old horse! Six ships! And we're barely scratched!—Why doesn't the enemy use his destroyers? Their big ships are no good! If they want to finish us, why don't they bring on their destroyers?"

As if to answer him, he saw. The *Minnesota* ran into an area where its smoke-screen had partly settled down and spread out. It was still not in view of the enemy capital ships. Only the fighting-tops and a quarter of the masts were clear. But the smoke-screen ended a half-mile away and the line of enemy destroyers were in full charge. Full speed ahead, bones in their teeth, straining every nerve for the velocity needed to make a success of their suicidal dash for the *Minnesota*. Twenty of them in a magnificent squadron plunging for the target of their fleet. . . .

One of them rose and buckled as a thousand-pound bomb exploded in the sea in contact with its hull. The Army bombers were at work. A second lost its tail and came to a halt, spitting smoke and steam and bitterly despairing streams of anti-aircraft shells. A third ran into an aerial bomb and started a dive that ended on the bottom. The *Minnesota's* anti-torpedo battery exploded thunderously. Again. Again. Again. . . . Six terrific volleys. Six destroyers died. The bombers got to work again on what were left. . . . The smoke-screen heaved slowly upward and blotted out the view.

There were twenty square miles of smoke-screen for the *Minnesota* to play in now, and the Army held the air against the most desperate assaults of an enemy now in actually a desperate position. The American battleship was the most powerful battleship on earth—even on paper. She could range her shots and spot them through a smoke-screen that made her invisible to the enemy. The Army had held the air above her from the first. Now it was fighting for the air above the enemy. American air-bombs sank one enemy aircraft-carrier. A pocket-battleship's steering-gear was wrecked by a bombing squadron who went on about their other business and left a flight of torpedo-planes to finish her off. The enemy fleet was in exactly the position into which—with the assistance of American politicians—it had maneuvered the American battlefleet off Hungars' Bank.

The *Minnesota* had control of the air and fought not only behind, but in a smoke-screen. The enemy ships were necessarily firing nearly at random, despite their enormous numerical superiority, while the *Minnesota* fired broadside after broadside with an uncanny accuracy. And its broadside was the heaviest afloat. In this action, because of the unhuman accuracy of its range-finder spotting, it secured a larger percentage of hits than any other vessel had ever made, in action or out of it.

"All they've got left—" panted the commander of the *Wasp*, "is subs!" He was hoarse, though he could never remember speaking a word, before, and much less shouting. "They've tried everything else. They'll try their subs now!"

MacReady's nose and ears were bleeding from concussion. His eyes were bloodshot and watering from the same cause. He was gory and horrible to look at, but he grinned exultantly.

"The wind's blowing the smoke-screen southward at fourteen knots. We're moving with it. There's no sub on earth can travel fourteen knots submerged, and you can bet your other collar, old horse, that no sub's going to get to us on the surface!"

A faint howl came up from below. It sounded even above the tumult of explosions all about and the uproar of aircraft aloft. There was no fighting above the *Minnesota* now. The fighting was taking place above the enemy fleet. The howl came up again, thin and reedy but triumphant. MacReady recognized it. It was a simultaneous roar of pure delight from the officers and men of the *Minnesota*. And MacReady's earphones gave him the cause of it an instant later.

"The enemy has formed a smoke-screen for his own protection from our fire!"

And Lieutenant MacReady and the commander of the now-trisected *Wasp* arose and danced clumsily about the fighting-top of the *Minnesota* and shrieked themselves hoarse from pure joy.

Because, of course, if the *Minnesota's* range-finders could range and spot shells through a smoke-screen to direct her fire out of it, they could work through two to direct her fire into another. And the enemy's control of the air was gone forever, so his only possible hope would be to destroy the accuracy of the *Minnesota's* fire. It was incredible. It was impossible. But it was true.

So the action of the Ninth of August, 1934, more commonly known as the Battle of the California Coast, was completed with two vast blankets of blackness floating up sea. The *Minnesota* remained deep in one mass of impenetrable darkness, and her guns boomed and boomed and boomed, sending shells screaming to the targets futilely hiding in the heart of another darkness, or with even greater futility trying to flee.

The action had started at half-past six in the morning. At three in the afternoon—it was seven o'clock by Washington time—an official order reached the *Minnesota* by wireless and in the official naval code. There had been a stormy, a tumultuous session in Congress. The bombardment of Seattle had had the effect the enemy anticipated. Instead of two days of debate, a conclusion was reached in one. A resolution had been passed accepting the preliminary peace terms of the enemy. The President of the United States was commanded to issue the orders meeting the enemy's requirements for an armistice.

As commander-in-chief of the military and naval forces of the United States, he issued the historic order:

"To the Senior Officer Commanding American Vessels of War in the Pacific Ocean:

Immediately on receipt of this order you will surrender all vessels under your command to the officer in command of the enemy battle fleet off our coasts."

And the captain of the *Minnesota* radioed his even more historic reply:

"To the President of the United States:

There is no longer an enemy battle fleet off our coasts. We have destroyed it."

As a matter of politics, the Battle of the California Coast had the extraordinary result of making pacifism no longer respectable. In any case, it immediately ceased to be a political issue, because Americans instantly backslid into patriotism. Our politicians, in the remaining three days before election, vied with each other in patriotic fervor. Where before they had competed for the noblest expressions of resignation to the will of Providence, now they struggled to outdo each other in the ingenuity of the demands they proposed we should make upon the enemy, as the price of peace. And they were voted for on that basis.

But at any rate—until America forgets—the Army and the Navy are not toys for politicians any longer. They are in the hands of real men.

THE END

ANNOUNCEMENT!

To the many correspondents who have made inquiry and to the many more who are still wondering:

We are NOT omitting any issue of "AMAZING STORIES QUARTERLY." We are merely combining the two publication date names and changing slightly the publication dates to more nearly conform with the seasonal date of publication. The next issue will be Fall Edition, followed by the Winter Edition, the Spring Edition and the Summer Edition in regular order.

The *SPRING-SUMMER* Edition of "AMAZING STORIES QUARTERLY" is a Gala number and is now on sale at all newsstands at 50c the copy.

In the Realm of Books

English Science Fiction

"Vandals of the Void," by J. M. Walsh. Published by John Hamilton, Ltd., 42 Gt. Russell St., London, W. C. 1, England. 288 pages. About $1.75.

MR. WALSH has about twenty-four novels to his credit, of which a few are scientific fiction yarns. No matter how fast his imagination moves, no matter how far it carries the reader, his material is at all times plausible. The present book is an Interplanetary thriller of the first order. We are transposed about 1,000 years into the future where Mars, Venus and Earth are firmly united in economic as well as political union. The story runs something like this: The hero is one Jack Sanders, Space Captain and member of the Space Guard, who is on a holiday jaunt to Mars with arrangements for a stop-over on Venus on the return voyage. The latest Space Liner *Cosmos* is in charge of Captain Hume of mixed parentage —that is of Martian and Terrestrian parentage. Sanders and Hume fast become friends and are pledging their newly found friendship in "Oxcta" a Martian non-alcoholic, yet marvelously invigorating beverage, which nobody but Martians are supposed to know about, when a message arrives from another Space Captain. He reports that a great many space-liners have drifted into their respective ports with their communication and their receiving sets hopelessly wrecked. All these ships report that they encountered a sudden covering of the temperature below the freezing point, which resulted in everybody apparently freezing to death. But after several hours of normal temperature, they all recover. Sanders is instructed to be on guard against a similar occurrence and is ordered to assume command in case of necessity. To be on the safe side, he examines the passports of all the passengers, and his curiosity and suspicion centers on one Nomo Kell, a Martian of most unusual appearance. Observing said Kell later in company with Jansea Dirka, a beautiful Martian girl, with whom Sanders has fallen in love at first sight, both come to the conclusion that Kell is not a Martian but must come from a planet with a lighter gravity, probably from Mercury. They deduce this because of his peculiar gait, indicating that he is not used to the Earth gravity maintained on the ship.

Presently, they sight a space ship, which is drifting and does not respond to signals. Sanders and Hume, having donned their space suits, board the drifting liner, where they become conscious of a peculiar, penetrating cold. Passengers as well as crew, are apparently frozen to death. No clews whatever are found, but as the temperature rises the seeming corpses revive. One of the passengers tells an incoherent story of having seen shadowy, almost invisible, figures moving about before she became unconscious.

Patrolship E22 has drawn near, and its commander takes entire charge.

Sanders, on returning to the *Cosmos*, declares his love to Jansea, who accepts and makes him one of Martian blood, through a secret Martian rite. She also gives him the "Crystal Eye," a sort of X-ray detector which can pry into the innermost secrets of body and soul.

They plight their troth with "Oxcta."

Returning to the deck, they feel that it is getting colder and colder and they see the officers and passengers succumbing to the cold. Apparently the "Oxcta" immunizes them against this artificial atmosphere. Suddenly they see almost invisible figures moving about. By using their ray pistols, they kill a few of them, each of which becomes visible when rayed, and they find that they are all like Nomo Kell, the mysterious Martian. Sanders and Jansea also see a gigantic space liner materialize suddenly and a chance discharge from their ray pistols explodes the strange ship.

The officers and passengers are now reviving rapidly and the cloaks of the slain space pirates yield their secret of invisibility.

Sanders makes an official report and is ordered to go at once to Gandini, the Martian base.

Arrived there, it is decided to make Jansea an honorary member of the Space Guard. Everybody is speculating as to the purpose of the mysterious happenings in space. No robbery is reported, no abduction of important persons, and it seems that the invisible visitors boarded the various ships for investigating purposes only.

Sanders and Jansea are married at once, and when a message arrives reporting the complete destruction of the major part of the Martian space navy by an invisible enemy, both are made captains of the *Cosmos*, which is being fitted with atomic disintegrators, the invention of Arenack, the foremost Martian scientist, who comes along as advisor.

While in space, Jansea and Arenack perfect a device which renders their own ship invisible, and when they meet the first ships of the invading Vandals, they have no trouble in vanquishing them.

Then a report is received advising the discovery of the secret base of the invaders. Arriving there, not only the secret base of the invaders, which came, as they had suspected, from Mercury, is wiped out, but their entire space fleet as well, and peace is re-established on the United Planets.

This is a rough draft of the major incidents in "Vandals of the Void." The book is crammed with action, super-scientific weapons and ditto apparatus, so dear to the heart of the scientific fiction fan, and I am quite sure that it will be enjoyed by all science fiction fans.—C. A. B.

From the Wrights

"The Devil's Highway," by Harold Bell Wright and John Lebar (Wright, Jr.) Published by D. Appleton & Co., 35 West 32nd Street, New York. 334 pages. $2.00.

THE devil's highway is a road traversing some of the wildest and most inaccessible parts of Colorado. There is very little traffic on it and its very isolation induced Professor Munsker to establish his secret laboratories in an extinct crater nearby. Professor Munsker is the "mad scientist" well known to scientific fiction, and this particular professor is ill-shaped, a hunchback with an enormous head, but he is a super-brilliant scientist. He was the unwelcome son of a lady of leisure and being born deformed was known to the neighborhood as the "Little Monster," which his babyish pronunciation changed into Munsker. In his early teens he was employed in a powerhouse, and the easy mastery of the huge machines, which obeyed him by the closing or opening of a switch, inflamed his imagination and started him on the road of research work in the electrical field. It is one of nature's little jokes to fit a powerful mind into a frail body and in Munsker's case his mind overcame all obstacles of environment and origin and he became world famous as an inventor. For the discovery of a particularly vicious poison gas he received large sums of money, not only from one, but from several governments and after this eminently successful double-crossing he disappeared from sight.

He needed money, much money, to develop a discovery he had made accidentally. He had stuumbled upon a force unknown to science, a force so vast and with such enormous possibilities that even his giant intellect could but slowly grasp all its potentialities. For want of a better name, he called this new force "Ethericity," and found it to be an all-pervading manifestation of cosmic energy, by means of which he was enabled to control and increase his own power of mind over other minds, as well as attain an absolute control of inanimate matter. He used certain radio tubes to step up the power of his mind, distance being a negligible quantity, and soon a network of agents, helpless under his control, covers the Earth. His ultimate plan is to release the new force at thousands of different points, at the same time with the controls of the master-machine set at disintegration. Feeling that he is getting old, he is looking for a mind equal to his own.

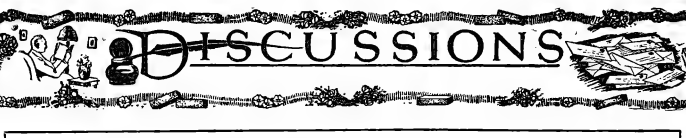
One of his agents discovers a likely mind in Fred Ramsey, who eagerly enters his services, but balks at the ultimate aims of the mad professor.

By subjugating Ramsey's mind to his own, he makes him conform to his ideas and wishes, but Alma, the agent's daughter, with whom Ramsey has fallen in love, furnishes the monkey-wrench which brings the Professor's machinery down in rack and ruin.

While trying to subjugate Alma also to his will, he finds that the true love Alma holds for Ramsay is more powerful than his own mind and he accidentally wrecks his own laboratory releasing the destructive forces stored up in his discharge tube, incidentally killing himself.

Of course Alma and Ramsay are married, so the world is allowed to go on free from danger until the next mad scientist comes along.

This book is a very creditable attempt at combining two almost incompatible conceptions: The psychic and the physical, and though the story somewhat lacks clearness about the scientific part, still it is quite enjoyable, as it is logical and exceedingly well written. It is different from the purely scientific fiction story, but this very difference makes it readable.—C. A. B.



In this department we shall discuss, every month, topics of interest to readers. The editors invite correspondence on all subjects directly or indirectly related to the stories appearing in this magazine. In case a special personal answer is required, a nominal fee of 25c to cover time and postage is required.

A GALLANT LADY WITH MODERN TRENDS BRAVELY DEFENDS HER TITLE WITH DELECTABLY POISONOUS SPEAR

Editor, AMAZING STORIES:

First and foremost I wish to proffer my sincere thanks to all those who have written such kind letters to me concerning my initial criticism of Dr. Smith's slang. My failure to reply in every case is due to lack of time, rather than courtesy. In common fairness I must add that a considerable portion of this unexpected appreciation refers to the composition of my appeal, rather than to an endorsement of the sentiments expressed therein. I will now take up my bow and arrows once again!

With eagerness and, I must confess, a certain degree of apprehension, I have been awaiting the descent of the Jovian bolts upon my rash young head.

Their arrival has not been accompanied by the spectacular devastation I anticipated. For this clemency I more than suspect I have to thank Dr. Smith's innate chivalry towards my sex. Having handed the worthy Doctor a large bouquet, I will loose the first shaft.

I am sorry Dr. Smith. Now that the smoke and flames have died away, it can be seen that the laurels still grace Mr. Campbell's massive brow. Somewhat unkew, it is true, but the celestial bolts will have to be bigger, and better aimed, if they are to be dislodged.

I will deal with Dr. Smith's reply seriatim. First, this matter of perspective. Dr. Smith's point is so obvious that I wonder he troubled to make it. Let him consider the problem from another angle. If, out of a total unconscious aggregate of 250,000 words, any appreciable percentage was slang, would quite so many people waste air at his altar?

Dr. Smith has failed to grasp the true implication of my letter. My humble petition concerned the presence, not the quantity, of the slang in his stories. Next please.

"Hello! My dear Mr. Dunark you could not have chosen a more opportune moment to materialize. May I ask you a question? We are told that Seaton's brain was imprinted upon your own. Right. Then how is it that out of the whole 250,000 words devoted to the Skylark Stories, there exists, in all your recorded conversations one instance, and one only, of slang?

"I put it to you. Mr. Dunark, that your creator is incorrect in his statement that you spoke English precisely as Seaton did: that he has damned himself more effectively on this point with his own pen than I can ever hope to with mine."

Good Lord! The rude fellow did not even say good-bye!

Consistency? Conspicuous by its absence! Verisimilitude? A boomerang Dr. Smith, already speeding upon its return journey to Olympus. Let us hope the impact will not be too severe.

I will pass on to that dreadful malady known as repetition. Is there one of us, of any taste and refinement whatsoever, who has *not* observed this bugbear to our ease? one who has not been irritated, tortured by it, daily?

Really Dr. Smith! That you should seek to perpetuate the nightmare on paper seems to me well-nigh incredible. What would be the results if reporters, writers, and others faithfully recorded or reproduced this ghastly disability of so many of our fellows, in their works? The consequences would be so appalling that they are surely best left to the imagination.

Another question arises. Is the conversation of a man who fails to employ slang in his speech of necessity "stereotyped, stilted, and utterly unnatural?"

Signs of frantic activity aloft. Very unfair I agree, Dr. Smith, but you see my point. I can see yours, to a certain extent slang is the organ of your protest against pedantry. Some remedies are worse than the disease. Is this "propaganda" to continue indefinitely? Surely a protest, carried to such lengths, is apt to become a trifle querulous with the passing years: rather mildewed and fly blown, as it were, with old age.

It is a remarkable coincidence that in the March issue, wherein my first appeal appeared, Dr. Sloane reviews a book entitled "Cruelty to Words." Dr. Sloane, I could hug you. I should appreciate it very much if Dr. Smith would read what Dr. Sloane has to say paying particular attention to the concluding paragraph. Possibly Dr. Smith might even purchase a copy of this book. I do not wish Dr. Smith to imply from this that I am suggesting he is a poor master of English. It furnishes, however, a full answer to his remarks about his learned confreres. Finally, I think everyone will agree with me that conversations taking place on Olympus are entirely inadmissible as evidence. From experience, I find they represent no criterion whatsoever of the normal speech of the participants, no matter what section of society they may be drawn from.

And now for that fatal word "Cuddlepup." Have indeed I have come to the whirlwind! Four portentous paragraphs descend upon me with crushing weight. The word never struck me as vulgar, merely crude. On reflection, however, Americans will probably find some of our English synonyms equally crude. I will therefore, yield me to Dr. Smith on this one point.

I cannot resist enquiring, however, whether Dr. Smith attributes his singular conjugal felicity to the employment of this word.

If so it is a cross, the imposition of which, even I, in the fulness of time, might come to bear with equanimity.

I am sure we all sincerely congratulate Dr. Smith on his happiness, anyway.

Having exhausted my puny stock of arrows, and hurled the last bouquet, I will now beat a hasty retreat before things get too hot to hold me. In conclusion, I would like to reiterate my admiration for Dr. Smith's stories. My only regret is that this idol of the scientifiction worship has feet of clay. However, one never knows. Perhaps Dr. Smith will relent and lead the way in a scientifiction renaissance. Heavens knows we need light badly in the present inspissated gloom.

Hearken! A gargantuan voice rumbles forth from Olympus. "Cuddlepup, maiden: Can a leopard change its spots? If you please Sir, miracles still happen—sometimes."

Olive Robb (Miss),
20, Winstanley Road,
Waterloo,
Liverpool, Eng.

(We are very glad to publish such well-thought out letters as yours, and we are relying on Dr. Smith for a reply. The interesting thing about it is that Dr. Smith has run up against criticism from a lady, and he is well able to handle a typewriter. America and England mutually criticize each other but standard writers are very nearly the same in serious text in both countries. Personally we never realized there was so much slang in Dr. Smith's stories. It just seemed to us pretty much along with the rest like the author. The battle is certainly spirited enough and we, too, are enjoying it.—EDITOR.)

JACK WILLIAMSON TO HIS OWN DEFENCE

Editor, AMAZING STORIES:

If space can be spared me, I should like to make some reply to Mr. Bernard J. Kenton's assault, in the April issue of AMAZING STORIES, upon "The Stone From the Green Star."

In the first place, I must cheerfully admit that I have discovered no elixir of youth. In writing this story I was compelled to depend for information on the subject of senescence upon current biological science. And upon this topic science had little definite to offer. To quote Dr. Raymond Pearl: "Many theories of senescence have been advanced. Not one of them can be regarded as entirely satisfactory, or as generally established by the evidence."

In that situation, I submit that I was at liberty to select from the several theories offered the one that seemed to me best substantiated, and which best served my fictional ends.

Considerable work has been done, by S. Voronoff and others, upon rejuvenation by manipulation of the endocrine glands—specifically, the sex glands. In certain cases they appear to have achieved striking temporary results. Voronoff says: "One of these (endocrine) glands should have as its special function the secretion of a substance which gives tone and stimulus to cellular vitality during a certain period of life and ceases to do this on the approach of old age."

That theory, upon which the rejuvenation in "The Stone From the Green Star" is based, appears to me fully as well substantiated and as plausible as Mr. Kenton's ingenious hypothesis that old age is caused by the encrustation of the circulatory system with limestone deposits.

My theory was that age and death, in a growing race, is as natural and as necessary as birth and youth. But, when evolution has ceased, when the race has reached its pinnacle of advancement, involution and the replacement of individuals is no longer desirable. And regarding this potential immortality of the race, I may quote Dr. Pearl again: "The successful cultivation *in vitro* of the tissues of higher vertebrates, even including man himself, over indefinitely long periods of time, demonstrates that senescence and natural death are in no sense necessary concomitants of cellular life."

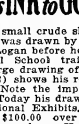
Anyhow, I am flattered to learn that my friend, Mr. Kenton, found the story sufficiently interested to read it, as he says he did, eight times.

I am glad to see the Doctors, Breuer and Keller, back in AMAZING STORIES. Besides their knowledge of science, they have the insight into human values that makes scientification literature.

Jack Williamson,
Ellida, Mexico.

(We are very glad to publish Mr. Williamson's reader to the criticism of his last story. Mr. Williamson makes it clear that he knows perfectly well what he is talking about, as they say, as he understands his subject and has read up on Voronoff's work well. He is inclined to have a sort of a Chimpanzee farm whence he gets his glandular extracts for making old people young again. A number of pictures have been published showing portraits of patients before and after treatment and it is quite remarkable to see the change for the better in the physiognomy. The whole face is changed, but the fact holds that the final end has to come. We read with pleasure your notice about Dr. Breuer and Keller, only they haven't "come back." They stayed right with us all the time.—Editor.)

DRAWING turns INK to GOLD



THE small crude sketch (1) was drawn by Herschel Logan before he had Federal School training. The large drawing of Lincoln (2) shows his recent work. Note the improvement. Today his drawings are seen in National Exhibits. Recently he made $100.00 over his regular monthly salary. He says, "Any average fellow with the same instruction should be able to accomplish similar if not greater results."

Many Earn $500 Monthly

Opportunities for artists have never been better. Publishers pay millions for illustrations every year. The Federal Home Study Course has been prepared by over fifty of the Nation's leading artists. If you like to draw, cash in on your talent. It's easy to learn the "Federal Way." You may have talent lying dormant in you, just as Logan had. Our Vocational Art Test will find that out. Send your name, address, age and occupation and we will send you the chart free, Act today.

Federal School of Illustrating
642 Federal School Bldg., Minneapolis, Minn.

FLIES 600 Feet! GIVEN

Howard Racer plan or Slingshot Glider given Free with Dipper Rubber-Jet. See, illustrated postpaid! Dipper flies 600 ft., easily built, accurate, safe. Big 16 in. model has 20 in. wing spread, motor, balsa propeller, landing wires, rubber motor, balsa prop-block, tailskid, everything. Complete now to get Howard Free! Dipper only 50c, which is under cost! GIANT Catalog, 25 cents. Dipper and Catalog 60c. Write DORSET MODEL AIRPLANE & SUPPLY CO., 3114 Harrison St., Dept. CG-9-2, Chicago.

50c POSTPAID for DIPPER

12½" wide—8½" long

Outdoor Jobs

WANTED—Names of men desiring steady outdoor jobs; $1,700—$2,400 year; vacation; pleasant, healthful work. Patrol parks; protect game. Details Free. Write

DELMAR INSTITUTE
Dept. A-88, Denver, Colo.

He Stopped Whiskey!

An Odorless and Tasteless Treatment When Used as Directed

Any lady can give it secretly at home in tea, coffee or food, and it costs nothing to try! If you have a husband, son, brother, father or friend who is a victim of whiskey, beer or wine, send your name and address to Dr. J. W. Haines Co. 379 Glenn Bldg. Cincinnati, Ohio, and they will send you absolutely free, in plain wrapper, a trial package of this wonderful treatment. What it has done for others is an example of what it should do for you. Write today and be thankful all your life.

ELECTRIC PANTS PRESSER

Illinois Man Makes

$88 in one Week

Pennsylvania agent cleared $76 in 4 days. Texas live wire started with earnings of $104. Profits like these easy for you with amazing new invention—Just-Rite Pants Pressed in 10 Seconds

No ELECTRICITY Needed

Millions waiting for this wonderful RED LION Pants Presser. Housewives, tailors, dry cleaners, agents, clothiers, etc., cash in on big profits. Every man wants one. Sells on sight. Weighs only 3 lbs. Fits in pocket. Write for particulars and 10 day trial offer. SILENT PRESS, Dept. 88-P 917 Main Street Cincinnati Ohio

as a clothes brush. Only presser in the world that will crease pants while being worn. Will last years. No pockets. No electricity. No gas. Experience unnecessary.

WE STILL FEEL SCIENCE FICTION WILL PLAY AN IMPORTANT ROLE IN THE LITERATURE OF TOMORROW

Editor, AMAZING STORIES:

I was one who, some six years ago, held up on high what the world would educate itself to the level of science-fiction. How many of your readers did not have the same hopes? That one day we would find the stories we read in the many science magazines in the higher quality magazines, and the public clamoring for such stories. Our dreams of renowned authors.

I realize today that the fault lies not in the field, but in its readers. You, who have studied literature, know that it goes in cycles. First there came the folk-lore, dealing in tales of magic and the supernatural; then stories of heroes of mythological nature working up to the present day there came Roman tales of bloodshed, then the period of literary stagnation during the Dark Ages, then of historical fiction, tales of exploration, romanticism, historical novels, Victorian romanticism, and today—realism. Tomorrow? I had hoped science fiction. I know better now.

Literature—what is it? One definition is as good as another. Essentially it is the story of man's reaction to his environment, to a problem, to anything that tests him. Then, if that is true, as I am assured it is, why science fiction is far beyond the pale of literature. Why? Read any of the stories that clutter the pages of any science fiction magazine. What do you find there?

Tales of such fantastic doings, stories set in far-off lands, wars and uprisings against the cruel and inhuman masters that invaded our fair planet, complete ignoring of the human for the inhuman. Action! Blood!

What becomes of the reaction of the human mind under the stress of this foreign environment? Nothing—it is ignored, for the readers also demand action. A fist to the jaw, a right to the solar plexus and the hero picks up the heroine and runs off to escape from the villains. Hero performs miraculous deeds at which a child would laugh; saves the world in ten days, or slays the monster, (a survival of the old dragon idea) some scientific unbelievable thing. Or if he falls in love with the heroine, he has to go through hell and hot water for her. Perhaps we have Mr. Burroughs to thank for this.

Examining the technique of the stories, we come to the conclusion they must have been written by writers who are not yet out of their adolescent stage. Either that or they have absolutely no conception of the form of the short story, much less that of the novel. They seem to forget that the idea of the short story is to tell a single incident of a man's life at a point where he is faced by some problem, be it psychological, astronomical, physical, moral, or anything else. Everything that puts him to a test; and the breakdown or building up of his character, or the way he reacts to the test, which is the same thing. Just what the novel is, is hard to say. It seems to be the portrayal of a man or what-have-you. It is like that given the short story in such few words. Be it what it may, it has its construction the same as a short story. The main idea is to show man in his environment and his reaction.

Now, as long as those principles of writing are ignored, just that long will science fiction remain in the stage it is; written by incompetent men of doubtful education and more doubtful intelligence.

I can't blame the editor for the fact that he caters to the low mental level demands of his public. I realize that, even if he can get good material, his readers will object to its publication. For it is not in the form.

It is up to the readers to bring up the type of fiction they demand to the level of literature. When they demand good fiction, there is no editor living who will dare bankruptcy by refusing to give it to them.

Have you ever wondered why authors of repute will not write science-fiction? Of course you will point to Wells and Verne, and lately to Owen Johnston and Aldous Huxley. But can you not realize that they are laughing at you? They employ the use of science in their stories to increase the satire. Just as Dean Swift did. Why will Wells not write pseudo-science now? Because his mental development prevents him. He knows that that medium is so stultifying that the writer becomes warped. Not only for that reason—he wrote the plot of every story that has been printed, and quit. I mean the plot of every story of the pseudo-scientific type.

Now, having read the rebashings of Wells and Verne a thousand times, I should think you would be tired of it. But no. If the writer gives it a tiny twist, changes the name of the characters and the setting, you are satisfied. Why? Why don't you get rid of these second-rate pot-boilers, why don't you demand that you get something other than hacks?

And you, Mr. Editor, I question you. Would you print a story that has not pages that drip blood? For after all, it is the editor who determines the demands of his readers. By that I mean that you experiment, and if your public doesn't like your experiments, you go back to the old hack-track. I hereby dare you: I am keenly interested in your type of fiction, but I hate to see the possibilities thrown aside by the writers and readers. Perhaps I am too harsh in my criticism, but the magazine is in existence to make money, but that does not justify the general low level of science-fiction.

Do not think that this is merely an idea to get a little publicity. It is not. I mean it for an appeal to the editor and the readers. Of course it is couched in violent language at times, but how attract attention to what you have to say?

Think over what I have said, and what I will always say until science-fiction is brought up to a higher level. Although you may say it now in this class, I am willing to devote my efforts in helping you appeal to your readers. I hope I am wrong, however, in what I say about my letter. He seems to believe the same. But even his work is going the way of all science-fiction "coming from the human to the inhuman."

Believe me: I am interested in your development, if only you will discard your hacks who are impeding your growth to a quality magazine. Please, in your answers, no attacks on the "condescension." I assure you, I am all sincerity.

Julian Gray,
Far Rockaway, N. Y.

(Your very interesting letter touching on literature is published with great pleasure by us. Certainly we believe with you that the popular magazines and newspaper literature and best sellers, he will realize two things. One is that there is an insatiable demand for new stories and that is why we hear so much about best sellers. If one of these novels has a 100,000th edition printed and is easily a best-seller, the publisher has every reason to be perfectly contented, but there is a sort of mystery about a book which is not a best seller, which was never written with the idea of its being such, but which is sold year after year and perhaps after ten or fifteen years has a larger annual sale than when it first started, which brings us to the point about our authors. Your letter sounds very much as though you might be confusing AMAZING STORIES with other magazines, when you say they are uneducated, inexperienced people who depend on much-time-worn plots as Wells and Verne for their "pot-boilers," for we number among our authors, experts in certain fields of science, by the full name all by ourselves, when we name the following: Dr. Smith, Dr. Keller, Dr. Breuer, John Taine, Harl Vincent, A. Hyatt Verrill, John Campbell, Jr., Edmond Meek, Bob Olsen, William Lemkin, Ph.D., Jack Williamson, Otis Adelbert Kline, and numerous other-less many, in fact, to mention in these columns. And where do you get the idea that we have ceased publishing the "hum-drum" type of story now catering exclusively to the bloody battle and action stories? There again, we believe you are getting your magazines mixed up. We believe we stand alone in retaining the real science-fiction story, with the accent on the science and the human interest rather than the "blasting-bloody-action" interest. But, of course, that won't prevent our giving a story written by you our careful consideration.—EDITOR.)

SOCIOLOGY IN FICTION

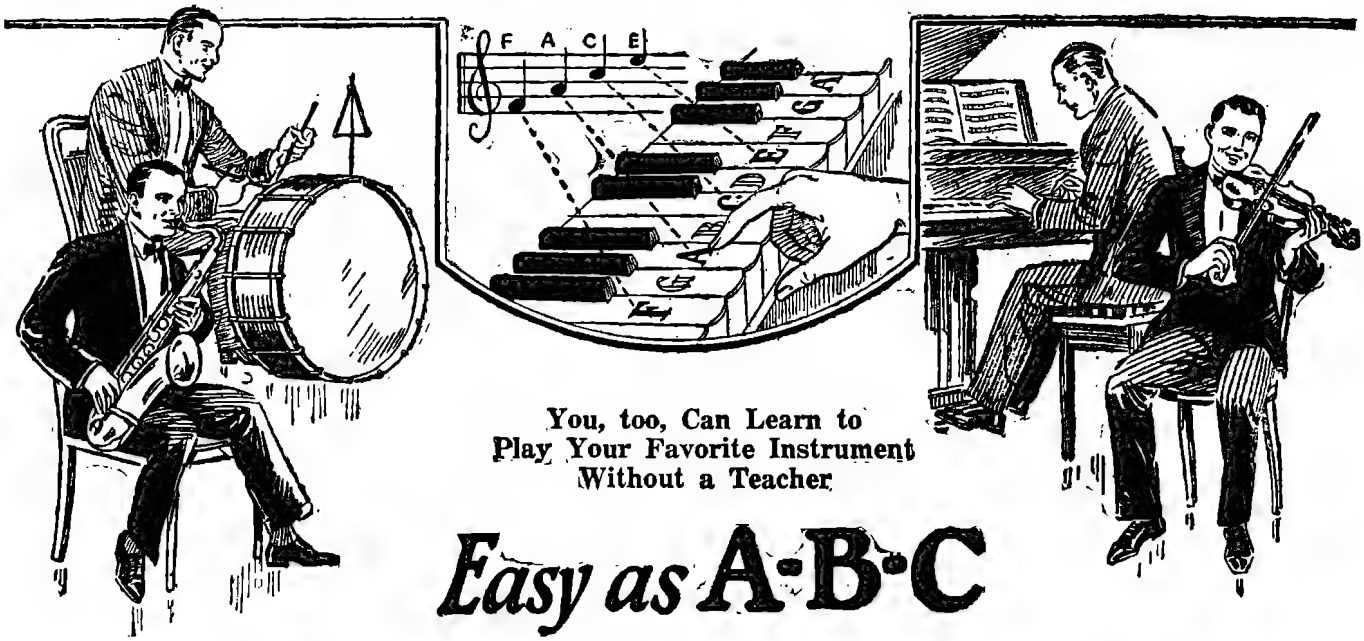
Editor, AMAZING STORIES:

In 1926 I purchased the first issue of AMAZING STORIES, attracted by its superb cover illustration. I have a complete file of every issue since has come to my hands; it has been a help in my work as well as a continuous source of enjoyment. I wish you as much satisfaction in publishing as I receive in reading your magazine.

Science is a field of science that I would like to see you pioneer in science fiction. Society is a machine, evolved from habits and constituted of ideas, which operates in an

Half a Million People

have learned music this easy way



You, too, Can Learn to Play Your Favorite Instrument Without a Teacher

Easy as A-B-C

YES, over half a million delighted men and women all over the world have learned music this quick, easy way.

Half a million—what a gigantic orchestra they would make! Some are playing on the stage, others in orchestras, and many thousands are daily enjoying the pleasure and popularity of being able to play some instrument.

Surely this is convincing proof of the success of the *new, modern method* perfected by the U. S. School of Music! And what these people have done, YOU, too, can do!

Many of this half million didn't know one note from another—others had never touched an instrument—yet in half the usual time they learned to play their favorite instrument. Best of all, they found learning music *amazingly easy*. No monotonous hours of exercises—no tedious scales—no expensive teachers. This simplified method made learning music as easy as A-B-C!

What Instrument for You?

Piano	Piccolo
Organ	Guitar
Violin	Hawaiian Steel Guitar
Banjo (Plectrum, 5-String or Tenor)	Drums and Traps
Clarinet	Mandolin
Flute	Ukulele
Harp	Trombone
Cornet	Saxophone
	'Cello

Sight Singing
Voice and Speech Culture
Harmony and Composition
Automatic Finger Control
Piano Accordion
Italian and German Accordion
Juniors' Piano Course

It is like a fascinating game. From the very start you are playing *real* tunes, perfectly, by *note*. You simply can't go wrong, for every step, from beginning to end, is right before your eyes in print and picture. First you are *told* how to do a thing, then a picture *shows* you how, then you do it yourself and *hear* it. And almost before you know it, you are playing your favorite pieces—jazz, ballads, classics. No private teacher could make it clearer. Little theory—plenty of accomplishment. That's why students of the U. S. School of Music get ahead *twice as fast—three times as fast* as those who study old-fashioned plodding methods.

You don't need any special "talent." Many of the half million who have already become accomplished players never dreamed they possessed musical ability. They only wanted to play some instrument—just like you—and they found they could quickly learn how this easy way. Just a little of your spare time each day is needed — and you enjoy every minute of it. The cost is surprisingly low—averaging only a few cents a day—and the price is the same for whatever instrument you choose. And remember you are studying right in your own home—without paying big fees to private teachers.

Don't miss any more good times, learn now to play your favorite instrument and surprise all your friends! Change from a wallflower to the center of attraction. Music is the best thing to offer at a party—musicians are invited everywhere. Enjoy the popularity you have been missing. Get your share of the musician's pleasure and profit! Start Now!

Free Booklet and Demonstration Lesson

If you are in earnest about wanting to join the crowd of entertainers and be a "big hit" at any party—if you really *do* want to play your favorite instrument, to become a performer whose services will be in demand—fill out and mail the convenient coupon asking for our Free Booklet and Free Demonstration Lesson. These explain our wonderful method fully and show you how easily and quickly you can learn to play at little expense. The booklet will also tell you all about the amazing new *Automatic Finger Control*. Instruments are supplied when needed—cash or credit. U. S. School of Music, 866 Brunswick Bldg., New York City.

Thirty-fourth Year (Established 1891)

U. S. SCHOOL OF MUSIC
866 Brunswick Bldg., New York City

Please send me your free book, "How You Can Master Music in Your Own Home," with inspiring message by Dr. Frank Crane, Free Demonstration Lesson, and particulars of your easy payment plan. I am interested in the following course.

Have You
.....Instr. ?.....

Name .....
(Please Write Plainly)

Address .....

City..... State.....

$30 A 4.40 NEW TIRE
$2.30
GOODYEAR Goodrich Firestone U.S. OTHER MAKES
FREE
Your offer rear car owners all over U.S.A. who in last year have purchased tires equalling tires from this well established company. You SAVE HALF. We are biggest tire dealers in world. We ship C.O.D. on our Standard Brand tires subject to your examination. Pay only $2.30 plus tax. Send your order TODAY.
12 MONTHS Supreme GUARANTEE Bond
BALLOON TIRES
Size | Tire | Tube
Size 4.40 $2.30 | $0.85
4.50-20 2.45 | .90
4.50-21 2.45 | .90
29x4.50 2.45 | .90
29x4.75 2.55 | .95
29x5.00 2.65 | 1.00
30x5.00 2.75 | 1.10
30x5.25 2.85 | 1.15
30x5.77 2.95 | 1.20
31x5.25 2.95 | 1.15
32x6.00 3.00 | 1.20
33x6.00 3.10 | 1.25
34x6.00 3.20 | 1.30
35x6.00 3.30 | 1.35
CORD TIRES
Size | Tire | Tube
Size 4.40 $2.95 | $0.95
4.50-20 3.15 | 1.00
4.50-21 3.15 | 1.00
29x4.50 3.15 | 1.00
29x4.75 3.25 | 1.05
29x5.00 3.35 | 1.10
30x5.00 3.45 | 1.20
30x5.25 3.55 | 1.25
30x5.77 3.65 | 1.30
31x5.25 3.65 | 1.25
32x6.00 3.70 | 1.30
33x6.00 3.80 | 1.35
34x6.00 3.90 | 1.40
35x6.00 4.00 | 1.45
All Tubes Guaranteed
Send only $1.00 deposit with each tire ordered, balance C. O. D. If you send cash in full deduct 5%. Immediate shipment. Only factory or replacement at half price. References: DUN and BRADSTREET.
VICTORY TIRE & RUBBER COMPANY
83rd and S. Morgan Sts. Dept. 124 CHICAGO, ILL.
DEALERS WANTED
STANDARD SERVICE

How to Be A Better Looking Nose
Improve your personal appearance
My free book tells you how to remold and improve the shape of your nose by remolding the cartilage and fleshy parts, quickly, safely, and painlessly, or refund your money. The very fine, pronounced results which only my new patented Model 25 Nose Shaper possesses, make results satisfactory to the most fastidious. Worn night or day. Over 100,000 users. Send for free book to
TRILETTY, Pioneer Nose Shaping Specialist
Dept. 293 BINGHAMTON, N. Y.

$-ALWAYS HAVE LUCK!-$

Unlucky in Money Games, Love or Business? Stop it now! Wear a pair of genuine MYSTIC BRAHMA RED LIVE MAGNETIC LODE STONES. Rare, Amazing, Compelling, Attractive Forces. Astounding Results. Worn or carried by Occult Oriental people as a POWERFUL LUCKY CHARM. Sent to prevent Bad Luck, Evil and Misfortune, and the reverse to attract Good Luck, Love, Happiness and Prosperity. Special only $1.97 and 15c postage. With valuable instructions FREE. Pay postman $1.97 and 15c postage on delivery or money refunded. You can be LUCKY! Order yours TODAY!
Dept. 53, P. S. BUREAU, General P. O. Box 72, Brooklyn, N. Y.
NOTICE! We positively GUARANTEE these Genuine Mystic Brahma Lode-stones are ALIVE! Just what you want, for they are the REAL THING—POWERFUL MAGNETS! GET YOURS NOW!

Old at 40?
Beware Kidney Acidity
Thousands of men and women past 40, and many far younger, who feel run-down and suffer from Getting Up Nights, Backache, Stiffness, Leg Pains, Nervousness, Acidity or Burning, caused by poorly functioning Kidneys or Bladder, should use Cystex (pronounced Sis-tex) especially prepared for these troubles. Works fast. Starts circulating thru system in 15 Minutes. Only 7Sc at druggists'. Guaranteed to satisfy completely or return empty package and get your money back.

$5,000 WILL BE PAID TO ANYONE WHO PROVES THAT THIS
is not the actual photo of myself showing my muscle physique and how the Jones system transformed my own height 14 ft. 3 1-4 inches
Hundreds of Testimonials from Clients up to 61 years old given to Readers further on in my booklet.
FIRST 70-DAY
No Appliances—No Dieting—No Drugs
ROSS SYSTEM NEVER FAILS. Ten Dollars Complete
Courses of Instruction and Advice. Send 10c. for postage and packing on my famous 70 days' trial offer.
E. MALCOLM ROSS, Height Specialist
Scarborough, England. Dept. 70, Ross Bldg.

Want a Steady Job?
$1900 to $2700 A YEAR
Railway Postal Clerks
Mail Carrier Postoffice Clerks
Mail Coupon Today Sure!
COUPON
FRANKLIN INSTITUTE
Dept. R-177, Rochester, N. Y.
Sirs: Rush, at once, without charge, (1) a 32-page book describing Government Jobs; (2) list of U. S. Government Jobs now open to me; (3) sample Civil Service coaching to get a position.
Name .....
Address .....

ordance with exactly known phenomena, as lawyers will attest. Human society in the future must be evolved from the present society, and I hope to read of the possibilities of that evolution, as foreseen by such writers as Dr. Keller and Dr. Breuer, and others of your talented staff.

R. W. Hall,
Thiells, New York.

(You will find in our stories quite a lot about sociology. Of course, this subject need not use up an entire story. You will find sociology appearing in many of our tales and forming an important part of the plot. Without sociology, many of the stories would fail in their rendering. Every time a character in a story is depicted in its relation to others or when some strange nation, says distant planet perhaps, is the subject of description, you will find that such stories contain a lot of sociology and some quite ingenious suggestions about other forms of society, (or, of course) than ours. We are glad to open this topic of sociology so that we can bring out these facts. —EDITOR.)

STORIES LIKED AND STORIES DISLIKED; A GOOD LETTER

Editor, AMAZING STORIES:

I desire to obtain copies of the magazines in which the following stories appeared:

1. Paradox (don't recall author or date of issue)
2. *Black Pliss*—a sequel to Paradox
3. Fitzgerald Contraction—don't recall author or date of issue
4. The Adventures of Dr. Mentiroso—I think is the name of the time story which I am anxious to get
5. The Time Machine
6. Futility—I think this was the title. I especially desire this one.

I have been grieving over some old copies of AMAZING STORIES and for the first time have stooped to read some of the letters from your readers. Although I have failed to get a single copy of A. S. since April, 1926, but after reading them I have just let them lie around until last week when I felt I must read a story in a back issue I have to buy a new copy (if possible).

At first I enjoyed the contents for sake of the stories themselves, but now I only glance through the stories in search of new science facts, ideas and fallacies therein.

I am usually bored by the stories now, through no fault of the stories (except the shortest short stories of late). Since you leave that sort of stories to be printed by other magazines I will drop the subject with saying that "The Color Out of Space," by H. P. Lovecraft, was to my way of thinking the best story that ever appeared in AMAZING STORIES.

I am very much interested in all novel scientific theories and facts and read AMAZING STORIES for the purpose of learning of any new theories.

The stories dealing in the abstract science are the best for such things. Like all stories dealing with *time*, fourth dimension and other dimensions dealing with vibrations and frequency of matter, etc. I am especially interested in any of the stories dealing with electronic and sub-electronic physics, and the Einstein theories of relativity and such. All stories dealing with any new conceptions of the construction of matter and space, etc., are very good.

I liked the "Jameson Satellite" and its sequel about as well as any stories of late for the story itself.

I won't criticize any stories or authors for no one story could be expected to please everyone and I doubt if any one story ever printed pleased every reader. I could give a lot of criticism of every story written, almost, but it wouldn't do any good, since so criticizing would be equivalent to asking to have them rewritten so to please my peculiar tastes, which could not please everyone and probably no one. However, I will say that every story is about as perfect a piece of masterpiece of imagination and expression as was ever written in the English language.

The real value that all intelligent readers of AMAZING STORIES gather from them is the broadening of their mental fields of understanding and thinking and raising their general intelligence. For those readers who can understand some of the deep theories propounded by some authors and can understand and reason out and connect widely separated but related theories into sensible theories that they themselves can understand, derive possibly the most material benefit from reading AMAZING STORIES.

Please let me know how many of above stories I can obtain and at what cost.

William H. Martin, Jr.,
Box 30,
Leesburg, Va.

(You will find in the Discussions many letters from writers who have left off their stories to enjoy which they are willing to sell. We imagine, however, that these are picked up very quickly by readers, so that as soon as they see such a letter they write to get in ahead of the others. Why don't you try looking through our advertising columns? You must remember that the stories of others do not appeal to you. After all, AMAZING STORIES is a fiction magazine, much of the theories given in it are fictitious, at least, are not accepted now. As far as pleasing everybody with a story is concerned, in the early days of AMAZING STORIES we published many reprints of real classics, but there seemed to be no result therefrom. Our readers did not care for them particularly and they impressed the editors as being a little old-fashioned and dull. But to take our good authors into consideration, and there are many of them that you favor, you will find that they are of the real high order and it is no simple thing to carry a magazine like this through for month after month and to give in its columns really good literature. You would probably be surprised if you knew the editorial work expended upon each story before it can appear in our columns.—EDITOR.)

A LETTER ABOUT THE SKYLARK STORIES

Editor, AMAZING STORIES:

I have been a constant reader of your magazine for two or three years now and would like to know if you will do me a favor. I have the five parts of the Skylark Stories and I can't get the sixth one, "Skylark of Space." I have tried all the places I know of in Seattle and have written to some I found in your Discussions columns and haven't heard from them.

He is sure a good writer and I've read the "Skylark" stories through (except the third) about ten or eleven times and each time I find something I had missed before.

When is he going to hand us another story? I think "Skylark" story was good, but not up to "Skylark III."

In your Discussions Department I've noticed where many have asked for more of his stories. In one way it was O.K. They brought out a fine letter from him (April issue) which showed where he got the material for his stories. In one way it was O.K. They brought out a fine letter from him (April issue) which showed where he got the material for his stories. In one way it was O.K. They brought out a fine letter from him (April issue) which showed where he got the material for his stories. There is one thing about his stories I like; he starts off with a bang; not two or three of your pages of very descriptive stuff. I think 90% of your readers want a different story from the usual run of love-sick stories and detective stories. More interplanetary stories, I mean.

So, if any of your correspondents have that issue and don't want a fortune for it, I would like to get in touch with them. I know about a year and several issues of the first three parts of "Skylark of Space" (August-Steremper, 1928) and would mail a set in exchange for Part III.

W. J. Uttubach,
Box 404, R. 3,
Seattle, Wash.

(Follow our Discussions and you will find it previously announced by somebody that they have back numbers which they are willing to dispose of, so that you may be able to fill up your set. We hope the stories have been extremely popular and you must have enjoyed very much, reading them so often. As far as knocking the story is concerned, this we will regard as perfectly right and proper and you can see from the letters we publish that we do not reject unfavorable criticisms. A story is printed and the magazine containing it goes to thousands of readers. They see that at the end of the magazine there is a large department for letters from readers, and if these are read, it will be seen that we put in letters favorable and unfavorable and there is no idea of restricting discussions to admiration. We are sure that it does the magazine good to have the absurd criticized constructively. We believe that our readers are really of the serious type and we endeavor to give them stories which have a touch of seriousness about them. Of course, all sorts of theo-

ries are brought out, but experiences show that it is not safe to discard new theories and that it is also not safe to adhere too closely to old ones. For your missing numbers, write to some of our correspondents in the Discussions Column, who will undoubtedly be able to supply you with them, or, the Stuyvesant Book Shop, 31 Third Avenue, New York City, can, we are sure, supply you with the desired back issues.—EDITOR.)

A LETTER FROM INDIA, A MOST VALUABLE AND INTERESTING DOCUMENT

Editor, AMAZING STORIES:

It is a long time since I last wrote for the Discussions Column of the AMAZING STORIES. I would not have written even now, but after reading your March issue of the magazine, I can not contain myself any longer.

First of all may I ask what led you to publish the story entitled "The Amir's Magic?" The story is neither Amazing nor does it deserve being called a story. I would like to know whether Mr. Johnson is an Englishman. If so the story is explained, though it still does not excuse your printing it.

Mr. Johnson forgets that this is the 20th Century and that India is as civilized as any Western country. Such Divans and Afghan Amirs are as imaginary as Santa Claus or Jack Frost. If he had and did, he would not make such absurd statements. Possibly the author did not think that he would be called upon to prove his statements. Perhaps he was sure that what he wrote about such a remote corner of the world would be swallowed by all.

There are people who fail to realize that a topic or a cause which to them serves as a moment's pastime or as something to be talked at, may mean life and blood to somebody else, and the author seems to be one of the former. If he was not he would not have been so ready to deride the Gandhists or to talk about them as "Gandhi's dogs."

Afghanistan and Russia have nothing to do with India. "A mighty country of the north" has no say in India.

In a magazine such as AMAZING STORIES, a story such as this must have no place. Politics can have nothing to do with Scientific fiction. This story is merely an effort at political exploitation and that, too, by a person who is absolutely ignorant of the fundamentals of the politics about which he is writing.

I have been reading AMAZING STORIES since it first appeared. I think I have still got copies of the very first months and for the six years or so that I have read this magazine of yours, this is the first time that I have had reason to be so bitter against a particular story.

I shall thank you very much to print this letter in your Discussions column.

Dady A. Ghandy,
16 Pali Hill, Bandra,
Bombay, 20, India.

(AMAZING STORIES is greatly flattered to receive a letter from distant India. India and Ireland are having their troubles with the British Empire and we all hope that they will come safely out of their disturbances. As far as we know, Mr. Johnson, the author of "The Amir's Magic," is an American and we are sure that no idea of inspiring Great India entered his mind. However, we hope he'll answer for himself. The writer of these lines is a great admirer of Mahatma Gandhi. Many years ago, the writer saw a great deal of an ex-consul who had served the United States in China and he scouted the idea that China was not as civilized as the United States. We are afraid, if you read the accounts of murders and crime in America, that you will be certain in your belief that the civilization of India is better than ours. The story you complain of in every way was pure fiction; it is not certainly meant as an effort at political exploitation. The story even indulges in a sort of magic in the action of a bee, and we feel that you are taking it too seriously. It did not seem to us as in any way connected with political propaganda. A. S. is not a propaganda sheet.—EDITOR.)

A VALUABLE LETTER FROM JOHNS HOPKINS UNIVERSITY

Editor, AMAZING STORIES:

Although I have been an intermittent reader of AMAZING STORIES for several years, this is my first venture into the Discussions columns. First let me compliment you on the general tone of the magazine. I enjoy each issue thoroughly.

In the difficult field of scientifiction, where scientists and pseudo-scientists become literary and *vice versa*, certain discrepancies are bound to appear. It is about some of these that I am now writing. In the realm of the unknown, certain license is allowable, but in the scope of modern physics, certain facts appear, refusal of cognizance of which has spoiled many otherwise good stories. I refer in particular to "The Racketeer Ray," by Murray Leinster. First I presume a ray was capable of lifting 600 lbs. from the bottom of the harbor, there is no reason to assume that as the basis for the maximum force of the ray. The objects raised were being buoyed up by an amount equal to the weight of water displaced. Consequently, in air, the ray would be weaker by an indefinite amount, depending upon the volume of the 600 lb. article.

Second: Assuming 600 lbs. to be the maximum lifting power of the ray, the rate of the young gangster's exodus from this earth is somewhat in error. According to D'Alembert's principle for uniformly accelerated motion, the acceleration is equal to the force producing it multiplied by the acceleration of gravity and divided by the weight of the body in pounds. Taking the weight of the skinny operator and the very portable ray gun together to be 200 lbs., the acceleration of gravity being in this case subtracted from the final result, the resultant acceleration would become approximately 64 feet per second, and the velocity at the end of the first second equal to half of that quantity. The acceleration would increase as the distance from the earth became greater and the gravitational field of the moon began to be an appreciable factor.

In the last issue I found "The Light from Infinity" most unusual, very interesting and practically free from errors in physics. One thing about it puzzles me. Just what is beam of light be seen in the void of outer space by an observer not in line with the beam? There would be no dust particles to reflect the light.

I should like to help Mr. Edgar A. Blair of Connelsville, Pa., if I may, on his question about absolute zero in gases. The kinetic theory of gases states that at absolute zero the molecular activity of a perfect gas ceases and the volume becomes zero. As there are no perfect gases, and as all gases become solid before they reach that temperature, the statement becomes valueless except in theory. Also, as the editor suggests, radiations from stars striking on particles of matter produce heat in the particles in question. If Mr. Blair's assumption were true, there would be no meteorites.

Capt. Meek's story, "Troyana," is very interesting and I look forward to some issue of the magazine because of it. I would like to ask Capt. Meek where his idea that the Trojans were Hebrew had its foundation. Also I have a little originality in names. Anyone who has read the Bible has met the names of most of his characters before.

Although most of the items mentioned in this rather lengthy epistle are relatively unimportant, I have intended the criticism to be constructive and do not want you to think that I am knocking the magazine. Far be it from me. I read each one thoroughly and when I am through, I forward them to a friend of mine in Berlin.

Melvin C. Tabler,
Box 1025, Johns Hopkins University,
Homewood, Baltimore, Maryland.

(You have to allow a considerable license in the treatment of science in such stories as those which we give. If they were held down by dry physics and facts, there are afraid that the stories themselves would become arid. There is one thing to be kept in mind always. —whether it is a planetary system or not. As regards the beam of light in space, there is cosmic dust in the great void and the author undoubtedly relies on that to make his ray visible. Constructive criticism is always valuable and always will be. We shall hope to get more letters from you in the future.—EDITOR.)

In the Great Shops of COYNE

Don't spend your life slaving away in some dull, hopeless job! Don't be satisfied to work for a mere $20 or $30 a week. Let me show you how to make REAL MONEY in RADIO—THE FASTEST-GROWING, BIGGEST MONEY-MAKING GAME ON EARTH!

Jobs Leading to Salaries of $50 a Week and Up

Jobs as Designer, Inspector and Tester, —as Radio Salesman and in Service and Installation—as Operator or Manager of a Broadcasting Station—as Wireless Operator on a Ship or Airplane, as a Talking Picture or Sound Expert—HUNDREDS of Opportunities for fascinating, BIG Pay Jobs!

10 Weeks' Shop Training AT COYNE IN CHICAGO

We don't teach you from books. We teach you by ACTUAL WORK on a great outlay of Radio, Broadcasting, Television, Talking Picture and Code equipment. And because we cut out useless theory, you get a practical training in 10 weeks.

TELEVISION Is Now Here!

And TELEVISION is already here! Soon there'll be a demand for TELEVISION EXPERTS! The man who gets in on the ground-floor of Television can have dozens of opportunities in this new field! Learn Television at COYNE on the very latest Television equipment.

Talking Pictures A Big Field

Talking Pictures, and Public Address Systems offer golden opportunities to the Trained Radio Man. Learn at COYNE on actual Talking Picture and Sound Reproduction equipment.

Earn As You Learn

You get Free Employment Service for Life. And if you need part-time work while at school to help pay expenses, we'll help you get it. Coyne is 32 years old. Coyne Training is tested—You can find out everything absolutely free. JUST MAIL the Coupon for My BIG FREE BOOK.

H. C. LEWIS, President
Radio Division, Coyne Electrical School
500 S. Paulina St., Dept. 26-66, Chicago, Ill.

Send me your Big Free Radio Book and all details of your Special Introductory Offer. This does not obligate me in any way.

Name .....

Address .....

City ..... State .....

EXPLORE YOUR MIND

DISCOVER YOUR MENTAL SELF and OVERCOME YOUR LIMITATIONS!

Learn the tremendous possibilities of your own mind. Explore the regions of that mysterious world within you. Why let time and circumstance shape the course of your life? Master the everyday problems of success and happiness. There are two of you . . . One, the outer, struggling, limited, physical self. The other, your mental self, forceful, creative, dominant. Conquer this inner, mental self and ATTAIN SELF MASTERY.

FASCINATING FREE BOOK EXPLAINS

The Rosicrucians, a brotherhood of learning, point the way. They have preserved the great truths of the mystery schools and have astonished the world of various times with the power of their vast knowledge. Write for FREE introductory book "The Wisdom of the Sages," which explains how you may receive the secret teachings of the Rosicrucians to study in the privacy of your own home. Address, Scribe L. P. A.

ROSICRUCIAN BROTHERHOOD
SAN JOSE • AMORC • CALIFORNIA

FREE! AMAZING BOOKLET Thought Transference Unusual Power

SECRET POWER YOUR FREE

FOR NO OTHER TELEPATHY IT MAY CHANGE YOUR LIFE! COURSE BOOKLET!

Send these fascinating letters from Telepathy users: Explains how to send and receive Telepathic messages. Mail Coupon Jacob Block, Mrs. Ida Ellis, Mrs. Ethel Meyers, Mrs. Ida Ellis, Mrs. Ethel Meyers, Mrs. Ida Ellis, Mrs. Ethel Meyers

(It is a personal gratification to the editors to know that you like the story "Tinmitak of the Corridors." As regards editorials, we feel that one is quite sufficient for an issue, because AMAZING STORIES is primarily a fiction magazine. The Discussions, which many consider the best part of it, have been added to the fictional yarn in the early issues and have been kept up ever since. Then we give some book reviews and occasionally some scientific poetry. Perhaps it is open question whether there is absolute zero exists. In working on helium, it has been approached very closely. Sometimes one feels that it is given attributes which do not really appertain to it. It is interesting to think that a thin wire at absolute zero could carry a big load of electric energy. Prof. Elihu Thompson has even suggested approximately the absolute zero of a conductor of electricity. It has been found that a current in a circuit approximately the absolute zero will keep going round and round without requiring but a very little energy.—EDITOR.)

QUESTIONS IN RELATIVITY — THE LORENZ-FITZGERALD CONTRACTION THEORY

Editor, AMAZING STORIES:

When you read my first question, please do not stop and consider me merely another fool; I may be another fool, but if so, I know of few sufficiently omniscient to cast the first stone. I have considered the question thoroughly, as far as I am able with my none-too-good understanding of the theory, and cannot myself answer it.

Why should the speed of light be the limiting speed of a *material particle?* I can see how the fundamental structure of the ether might conceivably be such that the limiting speed of a vibration transmitted by it might be 186,000 mi./sec. even at 1095 ft./sec., the speed of transmission of a wave in air under normal conditions; but in my mind, there is no insurmountable evidence of the fact that it should also be the speed limit in space, any more than that no object can surpass 745.24 m.p.h. in the upper stratosphere.

It must be borne in mind that one of the primary requirements of the Lorenz-Fitzgerald theory, indeed all wheels of relativity, is that all measurements must be referred to the same point, in time as well as in space. Thus, a body moving at a speed of 186,000 mi./sec., measured from an arbitrarily stationary point, would, *measured from that point,* have a *mass* equal in the direction of motion. Just what bearing this could possibly have on the structure of the moving body, or on the mental well-being of its hypothetical passengers, is beyond my feeble intellect, as long as such structure was measured *by themselves.* Supposing that some great physicist will free me of error, if I *am* in error, and wishing you the prosperity which you so richly deserve as the only classic silence-fiction magazine, I remain,

Augustus C. Johnson, Jr.,
1421 Locust St., NW.,
Washington, D. C.

(We publish your interesting letter and shall hope to get an authoritative answer from one of the leading authorities to appear in our next issue. We think that this will be the best way of treating your query—to put it up to an astronomer who is a very high authority on the subject of relativity. It is also quite possible that some other correspondents may take up the subject. It does seem strange to think that it should be a law that a person in a sleeping car is shorter when it is in motion than when it is standing still, that a projectile from a cannon should be shortened longitudinally when passing through the air at its high velocity. All sorts of queer suggestions may be evolved from considerations of the Lorenz-Fitzgerald contraction theory. A line of railroad track running east and west should be shorter than if the same number of cars were to be running north and south. You can see how all sorts of ideas may be evolved from this law of relativity.—EDITOR.)

THEY SUPPLY BACK NUMBERS

Editor, AMAZING STORIES:

In glancing through the pages of your periodical we note many requests for back issues of AMAZING STORIES. We are in a position to supply these issues at a nominal cost, and would be glad to give requests for definite issues our prompt attention.

Stuyvesant Book Shop,
31 Third Avenue,
New York City.

THE ACTION OF A ROCKET IN A VACUUM IS DUE TO NEWTON'S LAW

Editor, AMAZING STORIES:

As a reader of your magazine for several years, I would like to ask of you just one favor.

Please explain the principle of a rocket's action in a vacuum. No book I can get hold of gives a satisfactory explanation and as I never keep a magazine after I read it, I can't find anything on the subject.

William Girard,
Callicoon Center,
New York.

(The principle of a rocket's action in a vacuum or in an atmosphere is the same. Action and reaction are equal and opposite and the gases issuing from the rocket's base represent action and the rocket springs ahead reacting to that force. You know that a gun fired from the shoulder reacts—a hose ejecting water reacts, and in all these cases we have action and reaction. In old times Sea Captains, if chased, used to fire guns from the stern of their ship with the idea of accelerating its progress through the water (wind power). The action of the gun over the stern of the vessel produced reaction, pushing it forward.—EDITOR.)

Patronize Advertisers
in
AMAZING STORIES

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912,

OF AMAZING STORIES, published Monthly at Dunellen, New Jersey, for April 1, 1932.

State of New York
County of New York } ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Hugo Gernsback, who, having been duly sworn according to law, deposes and says that he is the President of the AMAZING STORIES Monthly, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and, if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Teck Publishing Corporation, 350 Hudson Street, New York, N. Y.; Editor, T. O'Conor Sloane, 350 Hudson Street, New York, N. Y.; Managing Editor, Miriam Bourne, 350 Hudson Street, New York, N. Y.; Business Managers, None.

2. That the owner is: Teck Publishing Corporation, 350 Hudson Street, New York, N. Y.; Macfadden Publications, Inc., 1926 Broadway, New York, N. Y.; Bernarr Macfadden, 1926 Broadway, New York, N. Y.; Orr J. Elder, 1926 Broadway, New York, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of the bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

LEE ELLMAKER,
President.

Sworn to and subscribed before me this 30th day of March, 1932

(SEAL) TERESA A. QUIGG,
Notary Public.

(My commission expires March 30, 1933.)

THE REMINGTON SHEATH KNIFE is just what you need for hunting, fishing or camping trips. It has a 4¼-inch forged blade with strong, durable, keen-cutting edge, Bone Stag handle and leather sheath. We will send you this knife

FREE

on receipt of only $1 for a two-year subscription to Hunting & Fishing, a 64-page monthly magazine full of hunting, fishing, camping, trapping stories and pictures, valuable information about guns, fishing tackle, game laws, best places to get fish and game, etc.

Clip this ad, and mail today with $1.00 bill to HUNTING & FISHING
157 Transit Bldg., Boston, Mass.

MONEY FAR YOU AT HOME

YOU can earn good money in spare time at home making display cards. No selling or canvassing. We instruct you, furnish complete outfit and supply you with work. Write today for free booklet.
THE MENHENITT COMPANY Limited
Dept. 248 Dominion Bldg., Toronto, Can.

Big 3ft. Telescope

Five Sections. Brass bound. Powerful Lenses. Military size. Length when closed 12 inches, when extended 3 feet. Has two eyepieces, erecting lens, objective lens. Can be used as a microscope. Guaranteed. Big value. Postpaid $1.75. C. O. D. 15c extra.

BENNER & COMPANY, T-73, TRENTON, N. J.

NEW SOLES 9c PAIR as low as

PaysYou UP TO $6 an Hour

Take orders for RAYAPOLE "Plastic Leather" that requires no shoes for an hour up to a pair. No nails or tools necessary. Just apply to old soles. Spreads in two minutes, like butter on bread. Fills all cracks and holes. Dries hard and tough. Waterproof. Wears like leather. Soles look like new leather. Wears like leather. Soles look like new. Guaranteed to satisfy. Agents earn up to $60.00 per day. Big repeat business. Write for FREE SAMPLE and full experience necessary. Start spare time. Write today.
RAYAPOLE PRODUCT MANUFACTURING COMPANY
8-57 Daylight Bldg., Cincinnati, Ohio

EARN MONEY AT HOME

YOU can make $15 to $50 weekly in spare or full time at home coloring photographs. No experience needed. No canvassing. We instruct you by our new simple Photo-Color process and supply you with work. Write for particulars and Free Book to-day.
The IRVING-VANCE COMPANY Ltd.
302 Hart Building, Toronto, Can.

Telegraphy
(Morse & Continental)

Step into this interesting—uncrowded—HIGHLY PAID profession. Become a trained operator in Morse or Radio Code—easily, quickly, at home, with TELEPLEX, *the Master Teacher.* Used by the U. S. Government and leading schools. Entirely new code course in 12 rolls of tape. *During last ten years TELEPLEX has trained more operators than all other methods combined.*

Write for Folder E-4

TELEPLEX CO.
76 Cortlandt St., New York, N. Y.

Learn AT HOME With

EXTRA **LOVE & SEX NEWS** LATE FINAL

READ BY OVER A MILLION MEN AND WOMEN. OVER 300,000 COPIES SOLD

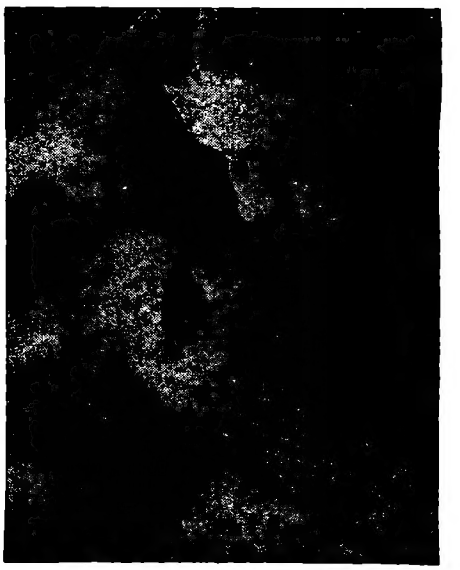
DARING FACTS REVEALED
SEX SECRETS EXPOSED

Sensational New Book Thrills Public Everywhere

New York, N. Y.—At last the truth about **sex** and **love** can be known! Frank, fearless book sweeps country. Reveals **plain facts** about secret sins. Startling—dynamic—honest. Tells all in **plain** language.

Bitter tears and years of regret can never wipe out the Greatest Sin. Should **Woman** pay the terrible price for a short moment's happiness? Ruined homes—lovers and sweethearts parted—married life wrecked—divorce —scandal—sins of the parents inherited by their children—all the horrible results of **IGNORANCE** of the most important part of life—**SEX.**

A lifetime of experience—intimate facts of Sex **told freely** for the **first time.** If you don't think this is the greatest value you ever received for your money—the entire purchase price will be refunded. Face the **true Facts** about Sex and Life fearlessly—sincerely scientifically.



ACCLAIMED BY PUBLIC — CENSORED BY IGNORANT!

2 FRANK & FEARLESS BOOKS IN ONE! 640 PAGES ..... 98 PICTURES

WHAT EVERY MAN SHOULD KNOW

A FEW OF THE SUBJECTS COVERED

- The Human Body
- Venereal Diseases
- Hygiene Precautions
- How to Build Virility
- How to Attract Women
- Joys of Perfect Mating
- The Sexual Embrace
- How to Gain Greater Delight
- Sex Health and Prevention
- The Truth About Masturbation
- Concerning Love
- Etc. Etc.

WHAT EVERY WOMAN SHOULD KNOW

A FEW OF THE SUBJECTS COVERED

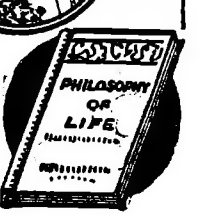
- Guide to Love
- The Meaning of Sex
- The Dangers of Petting
- How to Get Your Man
- What to Allow a Lover to do
- Essentials of Happy Marriage
- Sex Attraction
- Love Making and its Dangers
- How to Pick a Husband
- Intimate Personal Hygiene
- Secrets of the Honeymoon
- Birth Control Chart for Married Women

WAS $5.00 Now **$2.98**

NOTE—This book on Sex, Life and Health will not be sold to Minors—state your age when ordering!

FREE!

This instructive, outspoken book GIVEN WITHOUT COST, to all who order "The New Eugenics at $2.98. Learn all about the construction and functions of the human male and female body. Thrilling sex facts! FREE!



PIONEER PUBLISHING COMPANY, Dept. P
110 West 40th Street, • New York, N. Y.

SEX IS NO SIN!

Banish false modesty! Learn the **truth** from this frank, fearless book, **"The New Eugenics."** Everything about sex explained in simple understandable language. No "Beating about the bush"—each fact told straight from the shoulder. Part II. "The Parents Medical Counselor"—no home should be without this valuable information—explains the human body—its functions, ills, remedies. Both parts of this 640-page book, fully illustrated, reduced to **$2.98,** formerly $5.00.

BANISH FEAR AND IGNORANCE!

Never before have the **facts of sex,** the revelations of sin, the marvels of the human body been discussed so frankly, honestly and fearlessly. **Everything** you want to know—and should know, is told plainly, in simple language, anyone can understand. **"THE NEW EUGENICS"** leaves out nothing—and tells **all** in plain words. No one should be without this valuable book.

There is no darkness but ignorance—why not banish it **forever. Face life fearlessly.** Learn all about twilight sleep, sex excesses, the crime of abortion, impotence and sex weakness, etc., etc. Take advantage of the **special offer.** Mail the coupon **at once!**

For a limited time only!

Pioneer Publishing Company
110 West 40th Street
Dept P, New York, N. Y.

Kindly send me "The New Eugenics" (640 pages) in plain wrapper. I will pay the postman $2.98 (plus postage) on delivery. With the purchase of this book, also send me FREE of CHARGE your book, "The Philosophy of Life."

NAME.....

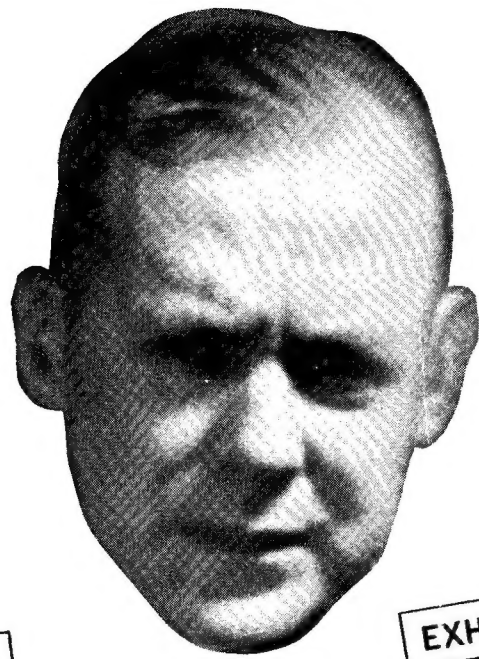
ADDRESS.....

AGE.....

(Orders from Foreign Countries Must Be Accompanied by Express or Money Order for $3.45.)

This Little Gland Robbed Me of Sleep and Health

HEADACHES



SCIATICA

NIGHT RISING

EXHAUSTION

Until I Discovered a New Hygiene for Men Past 40

IT had been coming on for years—this devilish thing called "Prostate Trouble!" I gave it little thought at first, because I figured that all men experience a certain change about my time in life. That was my big mistake. I thought it was *just* the breakdown of oncoming age and that I would have to put up with it. I did for a while, but a year later, my condition went from bad to worse at an alarming rate.

These Common Symptoms

My sleep was broken a dozen times every night. In fact, one hour's fitful sleep was a luxury. Pains had developed in my back and legs, and I was chronically constipated. I was run down in body and almost broken in mind—practically an invalid at 58. I talked to scores of men. In fact, I talked to practically every man I met or could get to listen. As I look back now I think I was practically insane on the subject.

Faces Surgery

It has been my experience that a majority of men past 60—and a surprising number, even at 40—had one of these distressing symptoms, but few men had it as bad as I did. I had seen my doctor, of course. But he could offer me but little relief. I spent hundreds of dollars in an effort to avoid an operation, for I had learned that gland surgery was usually dangerous. This insidious little gland that robbed me of sleep and health now threatened my very life.

The Turning Point

Then I read one of your advertisements. I admit I mailed the coupon without the slightest hope. There probably never was a more skeptical mind than mine. But this simple little act turned out to be the biggest thing in my life.

I can never thank you enough. I am now sixty. I can go to bed at ten o'clock and sleep straight through. My doctor has pronounced me in normal health. My entire body is toned up, and I feel almost like a youngster. I have had no return of the trouble, and now use your pleasant treatment just fifteen minutes a day, over one or two months, just to make sure that I keep my perfect health.

Millions Make This Mistake

When I was at my lowest ebb, I encountered so many prostate sufferers that I know there must be millions of men doctoring for sciatica pains in the back and legs, bladder and kidney weakness, chronic constipation, loss of physical and mental capacity and a host of supposed old age symptoms, *who should probably be treating the prostate gland!* In fact, I learned not long ago that certain medical authorities claim that 65% of men at or past middle age suffer from disorders of this vital gland.

My advice to these men is, not to make the mistake that I made. Send the coupon for that little book, "The Destroyer of Male Health." Find out the facts about this little gland, which the book contains. It explains a prominent scientist's discovery of a new home hygiene—explains how, without drugs or surgery, without massage, diet, or exercise, this method acts to reduce the congestion and combat the dangerous symptoms.

Scientist's Book Sent Free

See if these facts apply to you. Learn the true meaning of these common complaints and see why these ailments in men past 40 are so often directly traceable to a swollen prostate. The book, "The Destroyer of Male Health," is sent without cost and without obligation

Simply mail the coupon to W. J. Kirk, President, 5554 Morris Ave., Steubenville, Ohio.

If you live West of the Rockies, address The Electro Thermal Co., 303 Van Nuys Building, Dept. 5554, Los Angeles, Calif. In Canada, address The Electro Thermal Co., Dept. 55-H, 73 Yonge St., Toronto, Canada.

W. J. Kirk, President,
5554 Morris Ave., Steubenville, Ohio

Please mail me at once your Free booklet, "The Destroyer of Male Health," and full details about the new home treatment. I am not obligated in any way.

Name.....

Address.....

City..... State.....

AGENTS! SHARE THE PROFITS WITH ME ON THIS *NEWLY IMPROVED* TOM THUMB ELECTRIC WATER HEATER *WHICH IS*

Listed and Approved by Underwriters Laboratories

FREE Heater To AGENTS

Deposit $3.75 with us for sample outfit. After you send in 24 paid up orders, the $3.75 deposit is refunded and the heater is yours FREE.

Get Instant Running Hot Water from Cold Water Faucet

Show housewives, factories, etc., how they get instant running hot water from cold water faucet and make up to $40.00 a day.

Sells For $3.75 .. Pays You $1.00 *Clear Profit!*

KITCHEN

SHAVING

LIGHT WASHING

DOCTOR

FACTORY

Again Tom Thumb leads! The first and only portable electric water heater approved and listed by Underwriters Laboratories to be absolutely safe and non-hazardous for 110 volts, a.c. on medium branch circuits. Tell this story. Show how it is possible to get instantaneous, continuous running hot water from any cold water faucet. When your customers see this and know they can enjoy this great convenience for only $3.75, they will buy on sight demonstration. Price includes everything. Nothing else to buy—

No installation expense—just stick it on the faucet, ready for use.

Tom Thumb electric water heater has many uses and an unlimited market for sales. Sells for $3.75. You collect $1.00 deposit on every sale, which is your cash commission.

No Installation—Stick On Faucet and Sale Is Made

Tom Thumb doesn't have to be removed when hot water is not wanted. Easily detached and carried to any part of house where cold water is running and hot water is wanted. Made entirely of aluminum. Cannot rust—no moving parts. Unbreakable—nothing to get out of order. Do not be fooled by porcelain heaters which are easily breakable. Do not sell an unsafe heater which is not listed and approved by Underwriters Laboratories. Sell TOM THUMB. *Fire authorities, insurance companies and even the police forbid the sale of an electric water heater unless it is listed and approved by Underwriters Laboratories.* Stick a Tom Thumb on the faucet and tell the wonderful story about convenience, safety and low price and your sale is made.

Rush Coupon If $40.00 A Day Sounds Good To You

This new scientific safe invention offers tremendous sales possibilities. At low price of $3.75 you should be able to sell at least 40 a day. Sign your name and address to coupon for additional facts, or, better still, get started selling and earning at once by attaching money order for $3.75 to coupon and rush to me. I send complete selling outfit containing one Tom Thumb Electric water heater, 110 volts, order blanks, selling particulars and everything necessary to get you started earning at once.

Terminal Products Co., Inc.
Dept. 506, 200 Hudson St., New York

I have checked below the proposition I am interested in.

☐ Enclosed find money order for $3.75. Please send me 1 Tom Thumb, 110 volts, order blanks and selling information. It is understood upon receipt of this sample outfit I will be permitted to take orders and collect $1.00 cash deposit on every Tom Thumb I sell. I will send orders to you and you will ship direct to customers C.O.D. for balance, plus postage. We refund the full price ($3.75) paid for sample after you have sold 24 paid up heaters.

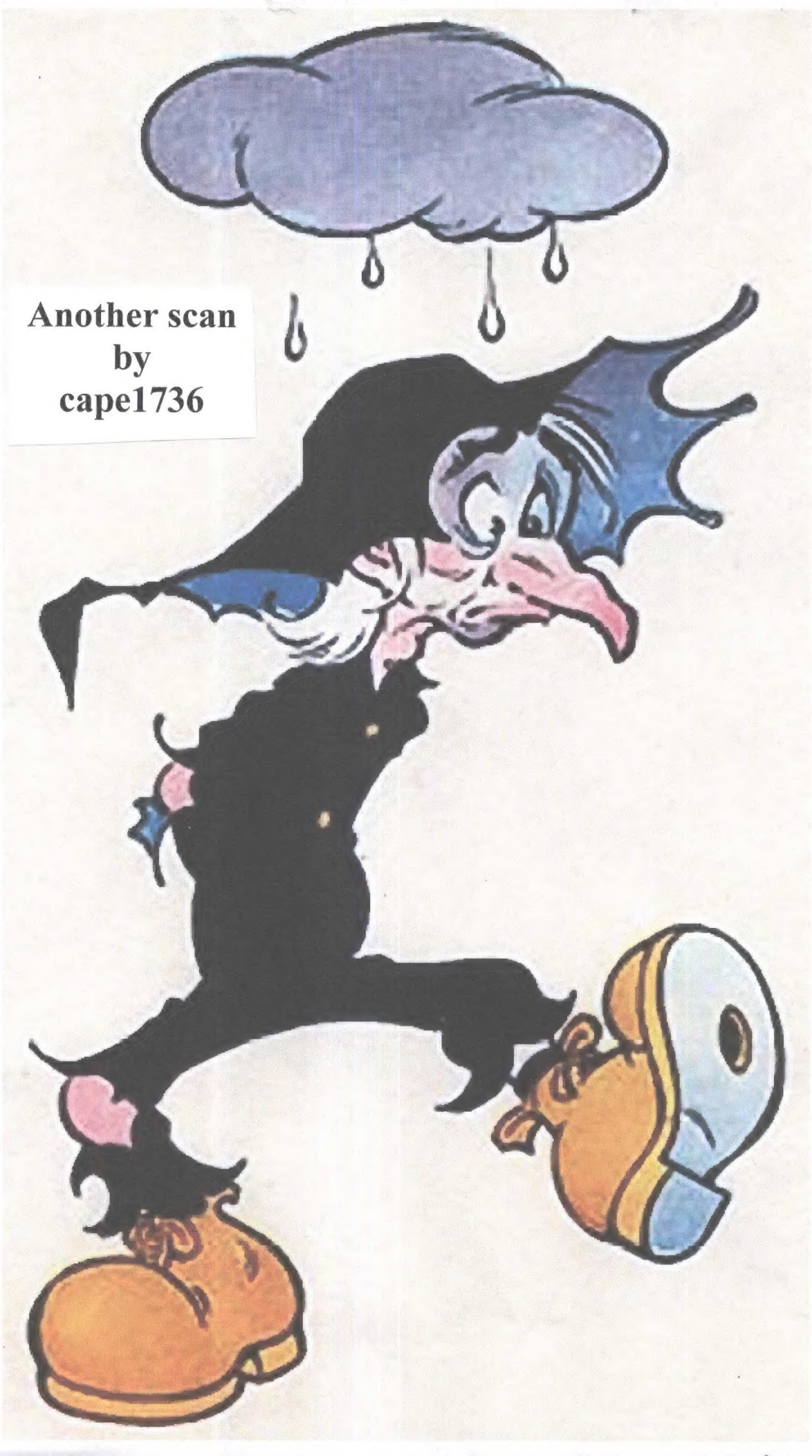
☐ I would like to have additional information before acting as one of your agents. Please send this by return mail free of obligation.

Name .....

Street .....

City ..... State .....

Canadians send cash with order at same price (U. S. A. money). Other foreign countries $1.00 extra cash with order.


Another scan
by
cape1736